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Alaska Farms

Organization And Practices In 1949

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"ALASKA FARMS:" ORGANIZATION AND PRACTICES IN 1949

Contents

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SUMMARY

This is the second of a series of annual studies being conducted to determine the types of farm organization and farm practices consistent with a stable and profitable farm economy. Detailed records of organization and operations in 1949 were taken from cooperating growers in the Matanuska Valley and in the Fairbanks area of the Tanana Valley. Information was secured on the extent of farming in the Anchorage area and on the Kenai Peninsula.

In Alaska, scarcity of cleared land limits full scale commercial organization and determines the kinds of crops and livestock on most farms. There is opportunity for expanding crop acreage, but land clearing, initial preparation and fertilization are expensive and time consuming.

Small acreages of crops were cultivated south and southwest of Anchorage in 1949. Most operators had little investment in productive farm equipment, tilled only small acreages (mostly potatoes) and had non-farm sources of income which provided their living. Two hog farms, using garbage from military bases for feed, and a few small poultry units were located near Anchorage.

Lack of suitable markets has sharply restricted agricultural development on the Kenai Peninsula. Farm sales were made from small acreages of vegetables and berries. Four operators with 2 to 4 milk cows marketed surplus milk and butter. There were small beef herds, one flock of sheep and seven small flocks of poultry. There were about 20 farmers on the Peninsula, and about 600 acres under cultivation.

Farms in the Fairbanks area of the Tanana Valley generally were small, part-time or pastime units with few or no livestock except on specialized farms. Potatoes were the dominant cash crop, although a few farmers specialized in other vegetables. There were three hog farms, two commercial dairies and one large and a few small flocks of poultry. Yield data were scanty. Reports indicated that potatoes averaged about 4¼ tons, hay 1¼ tons, and cabbage nearly 8 tons per acre in 1949.

Matanuska Valley agriculture is more nearly comparable to Stateside conditions than is agriculture in the Fairbanks area. Generally respondents owned their farms, and were family men in the prime of life. Their farms were more permanently organized and market outlets were more dependable than in the Fairbanks area. Many had limited Alaska farming experience. About one-fourth were part-time operators.

In the Matanuska Valley the 77 farms on which detailed data were secured averaged 184 acres in size. About one-fourth was cropland. Four-fifths of the cropland was seeded to small grains and forage crops. One-tenth was planted in potatoes. Most noted change in use of cropland from 1947 to 1949 was an approximate threefold increase in land used for

silage with a corresponding decrease in hayland. More acreage will be used for silage as farm storage capacity is increased. Dairy cattle and poultry were the only livestock of general commercial importance on farms. Fewer farmers were keeping small flocks of laying hens or 1 or 2 cows to supply milk, eggs and butter for the farm table than in 1947. Yields in 1949 were from one-fifth to over 2 times greater than in 1947 for all crops except silage and barley. Barley yields were about equal both years and silage yields were slightly lower in 1949.

Dairy farms had more stable market outlets, more time devoted to farming by the farm family and a better year-round distribution of labor requirements than other types of farms. They were generally larger, in terms of both cropland and total land, and had greater investments in buildings, machinery and livestock. The dairy industry has been expanding in recent years. Dairy farms had higher gross incomes than other types, but their net incomes were comparatively low. Over three-fourths of the cash income came from milk sales. Major items of cash expense were feed, livestock purchases and labor.

Potatoes were the most important cash crop. Three-fourths of the respondents grew market potatoes and one-fourth were classed as potato farmers. Potato farms averaged 35 acres of cropland per farm but over 4 acres of this was idle. An average of 10 acres per farm was planted to potatoes. Potato sales made up 65 percent and salaries and wages for non-farm work 20 percent of gross cash income to potato farmers. The 2 largest cash expense items were hired labor and fertilizers.

Some farmers produced comparatively large volumes of both potatoes and vegetables for the market. These potato-vegetable farmers, 12 in the survey, had about the same cropland acreage as potato farmers. An average of 5 acres per farm were idle. Growers had better summer distribution of farm labor needs and worked off the farm less than did potato farmers. Very few livestock were kept on potato-vegetable farms (as is also true of potato farms) so that farm labor needs were negligible in the winter. September was the most critical month. Forty-one percent of cash income was from potato sales and 42 percent from vegetables and berries. Cash expenses in order of size were hired labor, fertilizer, fuel and oil, equipment repairs, seed and feed.

Eight of the farms surveyed were classed as poultry farms. Although poultry farming is limited at present, more stable grain production, better poultry production practices, and developed markets may give the poultry enterprise advantages lacking in vegetable farming. Poultry farms had an average of only 25 acres of cropland and very little livestock other than poultry. About half the gross cash income came from egg sales. The feed bill accounted for almost half of the expenses.

ALASKA FARMS: ORGANIZATION AND PRACTICES IN 1949 1/

Clarence A. Moore, Alaska Agricultural Experiment Station

INTRODUCTION

Farming on a limited, widely scattered, self-sufficient and "hit-and-miss" basis has survived in Alaska for three-quarters of a century. No appreciable volume of products was grown commercially, however, prior to the establishment of the Matanuska Valley Colony in 1935. Although more susceptible to change than most Stateside farming, Matanuska Valley agriculture is well established. The only other area of commercial importance at present is the Tanana Valley near Fairbanks.

Between $1,200,000 and $1,700,000 were paid Alaskan growers for produce marketed in 1949. About half of this was grown in the Matanuska Valley, and one-eighth in the Tanana Valley. The rest came from small quantities produced and marketed near local concentrations of population in other areas, i. e. farms near Anchorage and on the Kenai Peninsula, dairies in southeastern Alaska, beef and dairy on Kodiak Island and garden plots and greenhouses elsewhere in the Territory.

A group of agricultural scientists in 1946 recommended farm management research in the Territory "to determine the types of farm organization and farm practices ... (that will) increase the efficiency of agricultural production, overcome ... the deficit in agricultural production, increase the farm income, and established a stable and profitable farm economy". 2/

1/ The writer expresses appreciation to Hugh A. Johnson, Head of the Agricultural Economics Department, Alaska Agricultural Experiment Station for planning and organizing the study and for his many constructive suggestions during the analyses and preparation; to farmers near Fairbanks and Anchorage, and in the Matanuska Valley who provided data for the study; and to personnel of the Alaska Agriculture Extension Service, the Tanana Valley Farmer's Co-operative Association and the Matanuska Valley Farmer's Co-operating Association who also provided information.

2/ "Report on Exploratory Investigations of Agricultural Problems of Alaska", Agricultural Research Administration, Miscellaneous Publication No. 700, p. 6.

Similar recommendations and requests have been made by other groups and individuals. The present survey of 1949 farm operations is the second 3/ of a series of annual studies being conducted to meet the need as set forth in these suggestions.

Detailed records of farm operations for 1949 were gathered from 77 cooperating farmers in the Matanuska Valley and 17 in the Tanana Valley. Growers near Anchorage were interviewed concernign production and extent of farming in that area. The Matanuska Valley Farmers' Cooperating Association, the Tanana Valley Farmers' Co-operative Association, and the Alaska Extension Service also provided information.

The survey consisted of questions concerning the labor force, land use, crop and livestock organization and production practices, yield and dispostion of crop and livestock products, enterprise requirements and costs and returns during 1949.

MINOR PRODUCTION AREAS

The extent of farming, type of farming and the operator's farm resources were studied in the Fairbanks and Anchorage areas and on the Kenai Peninsula. There is considerable interest in the agricultural possibilities of other areas. But production for market is sharply restricted in those areas at present. Results secured from the Anchorage and Fairbanks areas and the Kenai Peninsula are the subject of this section.

Kenai Peninsula 4/

The Kenai Peninsula has been relatively isolated from the larger Alaskan markets for agricultural products. Excepting a few air shipments of high-value perishable items, sale of surplus farm products was limited to a few local people. This trade isolation sharply limited the total

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3/ A similar investigation of 1947 farm operations was made by the Bureau of Agricultural Economics, United States Department of Agriculture, in 1948. Their report "Some Economic Aspects of Farming in Alaska" was processed in January, 1950.

4/ This section is based upon data being published in Alaska Experiment Station Bulletin 13, "Agricultural Possibilities of Alaska's Kenai Peninsula," by Richard McCurdy and Hugh A. Johnson.

consumption of Kenai grown farm products and thus limited agricultural development on the Peninsula.

In 1949 there were approximately 20 families getting appreciable incomes from farming on the Peninsula. Most of these, however, got the greater part of their living from non-farm sources. Cash farm receipts for all farm products sold was between $25,000 and $30,000. There were 6 herds of beef animals having over 10 head each, four small dairy herds producing milk for sale, one flock of about 45 sheep, 7 small flocks of poultry and one fur farm.

Homesteaders had over 50 wheel or track-type tractors and about 30 garden tractors. Many of the larger types were used primarily for transportation and the garden types were used to produce vegetables and berries for home use. Very few of the homesteaders had the necessary tools and accessories for tillage and farm operations.

Approximately 600 acres were under cultivation in 1949. About 450 acres, or 75 percent of this, was in hay. The remainder was in grain and vegetables. There were 20 tracts having 10 acres or more cleared. Four of these had over 50 acres cleared but nearly all of it was in hayland.

Anchorage Area

The most intensive, specialized tillage in the Anchorage area was on the Sand Lake road south and west of the city. Hog and poultry units were located northeast of town. In 1949, 3 farmers were devoting full time to farm operations. About a dozen families were farming part-time and, for most growers, income from the farm supplemented income from other sources. With the exception of 2 hog farms and a few poultry units most families had only a few acres of potatoes. The hog farmers contracted for garbage from the military bases near Anchorage. Two men were trying to develop into dairy farming.

Two farmers each had about 18 acres of potatoes in 1949. Other potato acreages varied from 1 to 4 per farm. Most of the crop was sold to retail stores in Anchorage, but a few tons were sold by contract to the armed forces and the Alaska Railroad. Most of the potatoes were marketed in 15 pound bags.

One farmer produced strawberries. They were sold at the patch primarily for canning purposes. A few potatoes were grown in rotation on the strawberry plots.

The operators had very little farm equipment. One grower owned most of the equipment in the Sand Lake community in 1949 and did custom work for neighbors. Another farmer bought a small tractor and some equipment in the early part of 1950.

Fairbanks Area

Most farmers in the Fairbanks area are located on the Farmer's Loop or on the Steel Creek roads, north, northwest and northeast of town (map, page 7). However, a few settled on the CAA road, the Badger road and along the Richardson highway, 35 miles or more from Fairbanks. Data were collected from 17 farmers who were located from 5 to 14 miles from town. There were approximately 30 places on which some farming occurred in the area. Between 600 and 800 acres were being farmed.

Potatoes and other vegetables were the main enterprises on the farms surveyed. According to source of cash farm receipts, ten were potato farms and 4 were vegetable farms. Also included were one hog farm, one poultry farm and one general farm. 5/

Eight of the operators were part-time farmers and at least 3 of these derived the greater part of their total cash income from non-farm sources. Half of the operators had been in Alaska less than 8 years and three-fourths had been on their farms for 6 years or less. Two-thirds of the men were more than 50 years old, but the rest were less than 40.

Family size was small, averaging 2 persons per household. There were only 10 children in 6 families and no family was larger than 4 persons. Seven farmers were single.

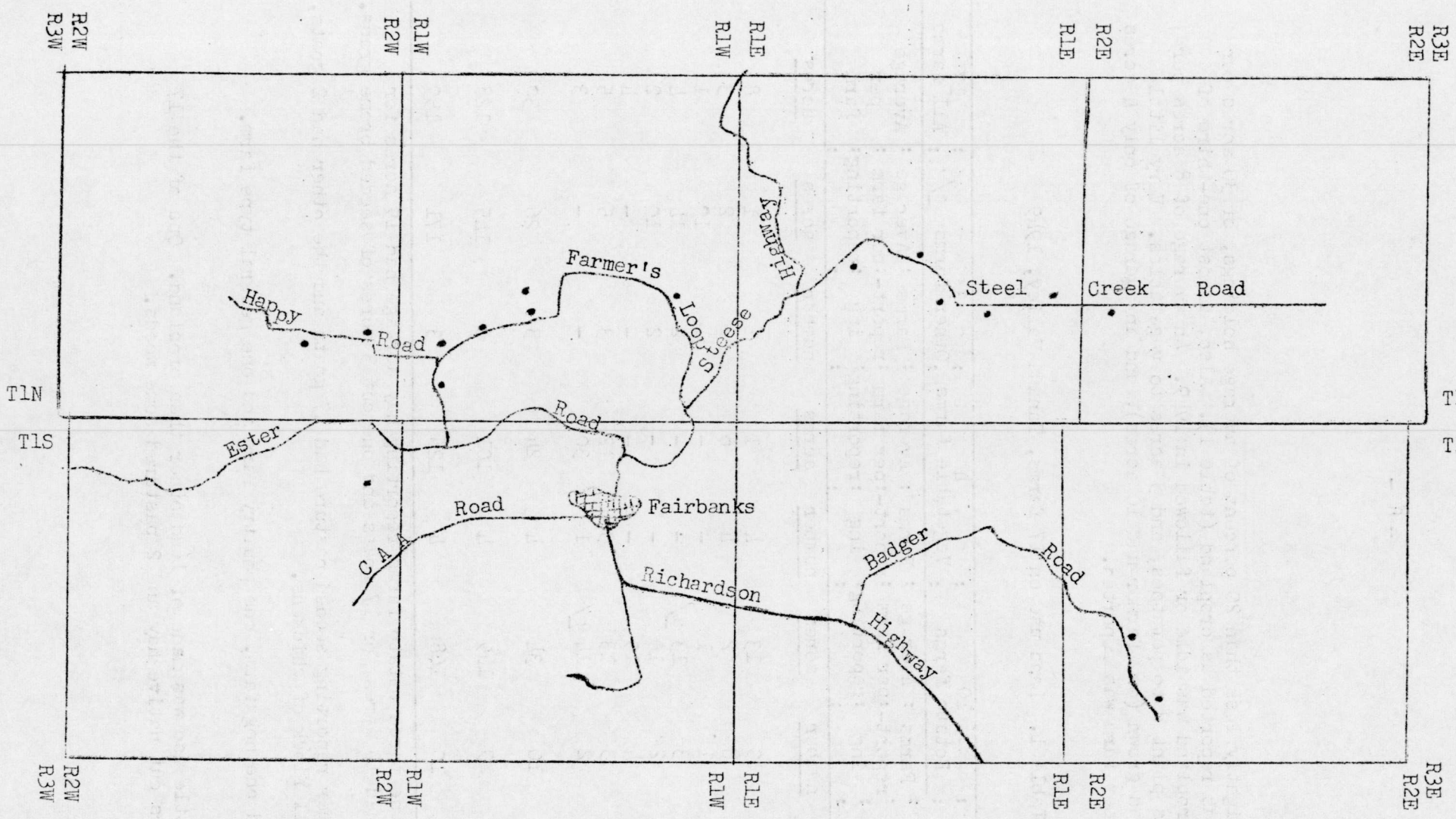
Three of the 19 operators contacted in the 1947 study had quit farming by the end of 1949. Three others indicated they probably would not farm in 1950. 6/

Land Use

Tanana Valley farms averaged 159 acres in size, varying from 24 to 320 acres. Much of this was in woods, brush and unbroken land.

5/ No records were taken of the 2 commercial dairies. Their operations were on a larger scale than is likely to occur with further dairy development in the area. Also, 2 farms do not provide an adequate number for reliable measures of average conditions. The 2 hog farms using garbage from the military base for feed were not included for similar reasons.

6/ "Some Economic Aspects of Farming in Alaska", p. 21. Two were living Outside, one had severed his farm connections and was employed in Fairbanks, two had almost complete failures in 1949 and were living and working in Fairbanks, and another was employed on a farm other than his own.



- Farms
- Secondary roads
- Hard surfaced road

Location of farms surveyed in the Fairbanks Area

Slightly less than 20 percent of average holdings, or 30 acres per farm, was reported as cropland (table 1). Also, almost one-third of total cropland was idle or fallowed in 1949. An average of 8 acres per farm was planted to potatoes, and 3 acres to vegetables. Very little grain was grown (one farmer had 10 acres), and an average of only 4 acres of hay per farm was reported.

Table 1. Land use on 17 farms, Tanana Valley, 1949

Land use	10 Potato farms		4 Vegetable farms		3 Other farms c/		17 All farms
	Farms reporting	Average per farm reporting	Farms reporting	Average per farm reporting	Farms reporting	Average per farm reporting	Average per farm
	number	acres	number	acres	number	acres	acres
Cropland:							
Potatoes	10	13	4	1	1	1	8
Vegetables	8	2	4	6	2	2	3
Grain	1	1	-	-	1	10	1
Hay	3	13 a/	-	-	2	14	4
Green manure	2	10	-	-	2	10	2
Fallow	4	19	-	-	-	-	4
Idle	3	13	3	12	3	5	5
Seeded pasture	2	14 b/	1	30	-	-	3
Total cropland	10	34	4	24	3	26	30
Other land	9	149	4	101	3	145	128
Total land	10	168	4	126	3	171	159

a/ One of the three potato farms reporting hay acreage had 19 acres for horse feed, one had 10 acres for 17 goats and one cut 3 acres of seeded brome grass.

b/ One farmer reporting seeded pasture had 17 goats and the other had 2 goats, 2 hogs and a small flock of chickens.

c/ Included one hog farm, one poultry farm and one general type farm.

Little use was made of land other than cropland. One of the 17 operators cut native hay and 2 pastured some woods.

Livestock

Ten of the farmers had no livestock, and 8 of them had neither livestock nor poultry. Five farmers reported a total of 29 goats, 2 had 6 horses, 3 reported chickens--flocks containing 1,000, 60 and 6 respectively--and one reported 11 hogs on hand in November, 1949. No dairy animals, beef or sheep were reported by the 17 farmers interviewed.

Farm Equipment and Buildings

Most of the farmers at Fairbanks had trucks, tractors, plows, and spring-tooth and spike-tooth harrows, (table 2). About one-half of them had potato planters, potato diggers, wheel hoes, mowers and cultivators.

Table 2. Equipment inventory of 17 farms, Tanana Valley, 1949

	Farms reporting	Equipment reported
	number	number
Automobile	5	5
Truck	15	15
Tractor	15	15
Plow	13	14
Disk	10	14
Harrows: spring and spike	14	21
Harrow: disk	4	6
Grain drill	5	5
Potato planter	8	7 a/
Wheel hoe	8	14
Cultivators	8	8
Mowers	6	8
Rakes	4	5
Grain binder	3	3
Potato digger	9	11
Wagons	2	5
Miscellaneous	11	b/

a/ Two farmers reported 1/2 ownership in a potato planter

b/ Includes 1 manure spreader, 2 fertilizer spreaders, 2 large breaking plows, 1 rotobeater, 1 garden tractor, 1 beet puller, and one 8-foot roller. Several electric motors, a light plant and a boiler were also reported.

Fifteen of the farmers had trucks. Five of the 12 trucks on which capacity was reported were 1/2 ton, 3 were 1½ ton and 2 were 3/4 ton. One each of 1- and 2-ton capacity were recorded. Seven of the 14 trucks on which the year and make were given were post-war models. Five of the farmers had pre-war model automobiles.

Of the dwelling houses reported on farms, 10 were frame constructions, 8 were log and one was pressed board (table 3). Twelve root cellars were reported by 10 farmers, 3 being in house basements. Seven small greenhouses, 6 barns, 4 garages, 4 henhouses and 10 sheds were also listed.

Table 3. Buildings on 17 farms in the Tanana Valley, 1949

Kind	Farms reporting	Buildings reported
	Number	Number
Dwelling house	17	19
Barn	5	6
Henhouse	3	4
Greenhouse	6	7
Root cellar	10	12 a/
Wells	4	4
Sheds	9	10
Garage	4	4
Granaries	1	1
Bridge	1	1

a/ Three of the 12 root cellars reported were house basements.

Crop Yields

Data on 1949 yields for the Fairbanks area were limited. Eleven operators grew potatoes on a total of 133 acres. Their average yield was 8,400 pounds per acre of which 6,600 pounds were actually sold. Five operators raised an average of 1¼ tons of hay per acre on 52 acres of hay land. The average yield of cabbage, as reported by 3 growers, was nearly 8 tons. Two growers harvested an average of 2½ tons of carrots per acre, while one harvested 9 tons of turnip greens and one reported a yield of 4 tons of radishes per acre. 7/

7/ See "Some Economic Aspects of Farming in Alaska", p. 23, for 1947 and usual yields.

THE MATANUSKA VALLEY

Detailed records were taken of farm operations from 77 growers, covering about three-fourths of the commercial production, in the Matanuska Valley. Most farms are located in an area about 7 miles wide and extending from the Matanuska River to Wasilla (map, p. 12). Several are located southeast of the river in the Bodenburg Butte area.

This section describes the overall operation and organization of farms in the Matanuska Valley. The farm family, tenure, land use, livestock organization, equipment, buildings, crop yields and income are factors studied. The section contains comparsions between types of farms only when necessary to clarify the text, but the last section of the report takes up the farm types in detail.

About one-fourth of all the operators were part-time farmers. 8/ Forty percent of the potato farms were part-time units, as were 38 percent of poultry and 17 percent of potato-vegetable farms. Only one of the 27 dairy farms was classed as a part-time unit (table 4).

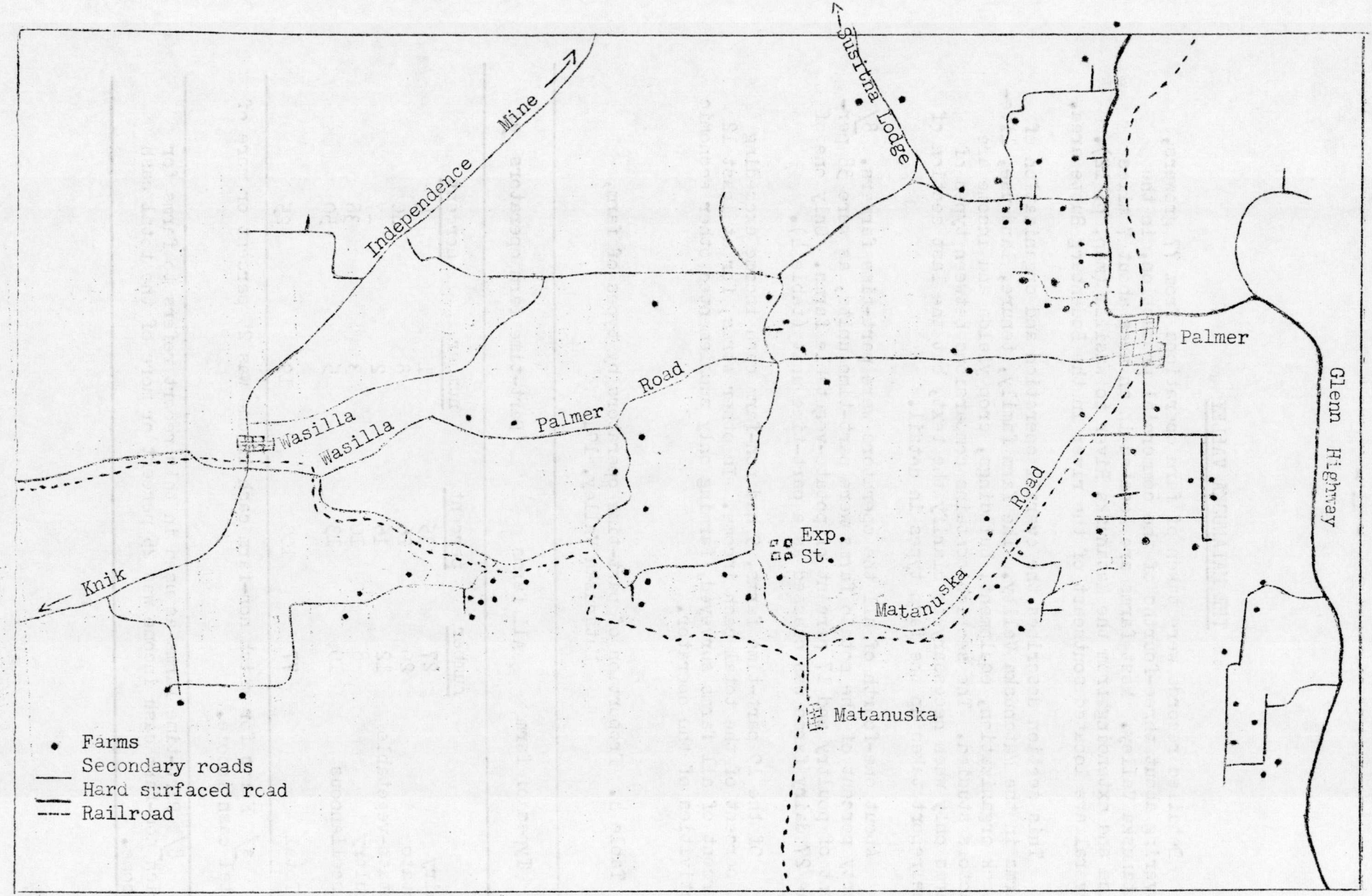
Of the 19 part-time farms, 9 had non-farm cash income exceeding 50 percent of the total cash income. In other words, for at least 12 percent of all farms surveyed, farming only supplemented other economic activities of the operator.

Table 4. Proportion of part-time operators by types of farm, Matanuska Valley, 1949

Types of farm	All farms		Part-time farm operators a/	
	number	percent	number	percent
Dairy	27	35	1	4
Potato	20	26	8	40
Potato-vegetable	12	16	2	17
Poultry	8	10	3	38
Miscellaneous	10	13	5	50
Total	77	100	19	25

a/ Farms for which non-farm cash income was 25 percent or more of total cash income.

8/ Part-time farms as used in this report refers to farms for which non-farm cash income was 25 percent or more of the total cash income.



Location of cooperating farms, Matanuska Valley, 1949

The Farm Operator and His Family

Matanuska Valley farm families were larger than those in the Tanana Valley, the average being 4 persons. Fifty-seven percent reported from 3 to 5 members in the household. Only 6 percent of the operators were single. On the average, 3 family members were over 10 years of age.

The average age of Matanuska Valley farmers was 45 years ranging from 25 to 63. Twenty-eight percent were under 40 years, 44 percent from 40 to 49 years, 22 percent from 50 to 59 years, and only 6 percent above 60 years of age. Almost three-fourths of them were less than 50 years old.

These farmers had been in Alaska an average of 12 years, with extremes varying from 2 to 38 years. Forty-four percent had been in Alaska 10 years or less and 81 percent 15 years or less. They had been on their present farms an average of 8 years, ranging from 1 to 20 years. Fifty-two percent had been on the farm 5 years or less and only 6 percent more than 15 years.

Tenure

Three-fourths of the farmers owned all of the land they were using. The remaining fourth rented an average of 42 acres each in addition to the land they owned. Only one farmer rented an entire farm.

Most of the rented land was used for forage crops, although small amounts were used for pasture and potatoes. Some farmers had partnership agreements on small acreages of vegetables and potatoes.

Complete data were secured on 18 rental agreements. Thirteen were straight cash rentals, one was for cash and improvements, 2 were crop share (1/3 - 2/3 and 1/4 - 3/4), one an improvement deal, and one farmer boarded the owner for the use of some land.

Cash rentals varied from $5 to $10 per acre. The most common price was $8. A relatively low demand for land 9/ plus the use to which the land is put (mostly forage crops) probably accounts for the low rental fees.

9/ Although a large number of farmers do not have sufficient land for a full-time economic unit, they plan and organize their operations on less than a full-time basis, a practice creating little active demand for rentals.

Land Use

Scarcity of cleared land precludes full scale commercial organization and determines the kinds of crops and numbers of livestock on most farms in the Matanuska Valley. There is opportunity for expanding crop acreage on most farms. To condition land for cropping, however, requires not only the initial clearing of virgin timber and brush but also special and expensive methods of preparation and fertilization over a period of 3 to 5 years.

Twenty-seven of the farmers cleared a total of 182 acres in 1948 and 22 cleared 150 acres in 1949. The average clearing per farm in 1948 was 2 acres and on individual farms, ranged from 1 to 30 acres (table 5).

Table 5. Land clearing: 77 Matanuska Valley farms by types of farm, 1948 and 1949

Types of farm	Total farms	Number of farmers that cleared land		Average cleared per farm reporting clearing		Average cleared for all farms in each type	
		1948	1949	1948	1949	1948	1949
		number	number	acres	acres	acres	acres
Dairy	27	15	10	9	7	5	3
Potato	20	6	7	3	7	1	2
Potato-vegetable	12	1	2	11	3	1	-
Poultry	8	3	1	6	1	2	-
Miscellaneous	10	2	2	4	13	1	3
Total or average	77	27	22	7	7	2	2

In 1949 the average was 2 and the range was from one-half to 20 acres. Factors which hinder clearing are: (1) a relatively high original cash cost, (2) lack of clearing equipment when needed, (3) additional preparation and labor required to put land into production after the initial clearing, (4) the active labor market that makes it difficult to keep farm labor, and (5) the ever-present uncertainty of markets 3, 4, and 5 years hence--after the land is in full production.

In 1948 fifteen of the dairy farmers cleared $2\frac{1}{2}$ times as much land as all the rest of the farmers put together. Their average clearing was 9 acres per farm compared to a $4\frac{1}{2}$ acre average for 12 of the other farm types. About the same relationships existed in 1949.

Size of Farm

All land in the 77 farms exceeded 14 thousand acres, an average of 184 acres per farm (table 6). One-third of them had less than 100 and two-thirds had less than 200 acres. By types, the average varied from 79 acres in poultry farms to 229 in dairy farms. However, little use was made of three-fourths of the total land in farms.

Total cropland amounted to about 3,600 acres; an average of 47 acres per farm or about one-fourth of the area in farms. 10/ Three-fourths of the farms had less than 60 acres of cropland and one-half had less than 40 acres (table 7). By types of farm, 17 of the 20 potato farms, 11 of the 12 potato-vegetable farms, and 8 of the 10 miscellaneous farms had less than 60 acres of cropland. Only half of the dairy farms had less than 60 acres. No poultry farm had more than 35 acres of cropland.

Cropland Use

One of the most significant changes in Matanuska Valley crop production in recent years has been the increase in acreages used for production of silage and seeded pasture. In 1947 11/, 48 percent of all cropland was used for hay production and only 5 percent was used for silage. By 1949 hay acreage had decreased to 32 percent of total cropland and silage had increased to over 17 percent (table 6). The greatest increase was on dairy farms where most of the total acreage of silage was grown. More acreage will be put into silage as the farm storage capacity is increased.

Seventeen percent of cropland was in seeded pasture in 1949 as compared to only 11 percent in 1947. The proportion in grain, however, was less--13 percent compared to 18 percent in the former year.

Seventy-nine percent of total cropland on all farms was used for hay, silage, grain, and seeded pasture. Of the remaining 21 percent, 11 was devoted to potatoes and 2 to vegetables in 1949. About 8 percent was idle and fallow.

Four-fifths of the farmers grew hay in 1949, three-fourths grew potatoes, and two-thirds had seeded pasture (table 8). Vegetables and small grains each were grown by one-half of all interviewees, and two-fifths had silage crops. Over one-third of the farms had some cropland that was idle.

10/ Cropland as used in this report includes seeded pasture, idle and fallowed land.

11/ "Some Economic Aspects of Farming in Alaska", table 6, p. 31.

Table 6. Land use: Average acres and proportion of cropland in specified crops, by type of farm, Matanuska Valley, 1949

Land use	27 Dairy farms	20 Potato farms	12 Potato-vegetable farms	8 Poultry farms	10 Miscellaneous farms	77 All farms in survey
	acres	acres	acres	acres	acres	acres
Cropland:						
Potatoes	2	10	6	4	2	5
Vegetables	1	1	5	1	1	1
Small grain	10	7	2	5	-	6
Hay	25	9	7	10	16	15
Silage	20	1	1	-	1	8
Green manure	--	--	2	1	-	-
Fallow	--	1	1	1	1	1
Idle	1	3	4	1	6	3
Seeded pasture	14	3	6	2	5	8
Total cropland	73	35	34	25	32	47
Other land	156	150	112	54	155	137
Total land	229	a/185	146	79	187	184 a/
	Proportion of total cropland					
	percent	percent	percent	percent	percent	percent
Cropland:						
Potatoes	3	28	17	16	6	11
Vegetables	1	3	15	4	3	2
Small grain	14	20	6	20	-	13
Hay	34	25	21	40	50	32
Silage	28	3	3	--	3	17
Green manure	--	--	6	4	-	--
Fallow	--	3	3	4	3	2
Idle	1	9	12	4	19	6
Seeded pasture	19	9	17	8	16	17
Total cropland	100	100	100	100	100	100

a/ One dairy farmer had 960 acres of land which increased the average total land per farm by 29 acres on dairy types and by 10 acres on all farms in the survey.

Table 7. Total cropland by type of farm,
77 farms, Matanuska Valley, 1949

Cropland	27 Dairy		20 Potato		12 Potato-veg.		8 Poultry		10 Miscellaneous		77 All farms	
acres	number	percent	number	percent	number	percent	number	percent	number	percent	number	percent
From 0 thru 19	--	--	7	35	3	25	1	12	3	30	14	18
From 20 thru 39	3	11	7	35	5	42	7	88	4	40	26	34
From 40 thru 59	10	37	3	15	3	25	-	--	1	10	17	22
From 60 thru 79	3	11	1	5	1	8	-	--	2	20	7	9
From 80 thru 99	5	19	1	5	-	--	-	--	-	--	6	8
100 and above	6	22	1	5	-	--	-	--	-	--	7	9
Total	27	100	20	100	12	100	8	100	10	100	77	100

On farms where grown, there was an average of 19 acres of hay, 19 acres of silage, 12 acres of grain, 11 acres of seeded pasture, 6 acres of potatoes and 3 acres of vegetables per farm.

For all farms in the survey, the average acreage of hay was 15, silage, 8; seeded pasture, 8; and small grain, 6 acres per farm. Potatoes averaged 5 and vegetables 1 acres per farm.

Table 8. Land use: Number of farms reporting each kind of crop and average acres, by type of farm, Matanuska Valley, 1949

Land use	27 Dairy	20 Potato	12 Potato-vegetable	8 Poultry	10 Miscellaneous	77 All farms
			Number of farms reporting			
Cropland:						
Potatoes	12	20	12	8	7	58
Vegetables	6	13	12	5	5	41
Small grain	19	13	3	3	2	40
Hay	25	14	8	6	9	62
Silage	26	2	3	-	1	32
Green manure	--	1	1	2	1	5
Fallow	1	5	2	1	1	10
Idle	4	8	6	4	4	26
Seeded pasture	24	9	8	4	7	52
			Acres per farm reporting			
Cropland:						
Potatoes	4	10	6	4	2	6
Vegetables	3	1	5	1	2	3
Small grain	15	10	10	12	1	12
Hay	27	13	11	14	18	19
Silage	21	8	4	--	12	19
Green manure	--	4	20	6	1	7
Fallow	3	4	4	6	6	4
Idle	4	8	9	3	14	8
Seeded pasture	15	8	9	4	7	11

Livestock Organization

Dairy cattle and poultry were the only livestock of commercial importance in Matanuska Valley agriculture during the year. The few beef animals and hogs produced on farms were mostly consumed at home. 12/

Three-fourths of the farmers visited in 1949 kept one or more milk cows (table 9). Over half the potato farmers, three-fourths of the poultrymen, half the potato-vegetable growers, and two-thirds of the miscellaneous farmers had cows on hand December 31, 1949--primarily to supply milk for home use. Half the farms on which cows were reported were Grade A dairies. Heifers and calves were reported by more than half of all operators, and bulls and beef animals by one farmer out of eight.

During 1949 a net increase of 77 milk cows--23 percent above the January total--occurred on the farms studied. Practically all the increase was on the 27 dairy farms which had 84 percent of all cows recorded. Inventories increased on these 27 farms from an average of 10 head on January 1 to 13 head on December 31. Heifers on dairy farms also were increased from a total of 68 on January 1 to 100 on December 31. Factors contributing to this increase in dairy stock were: (1) more operators saving heifers born on the farm, 13/ and (2) ship-ins from the States, both over the highway in midyear and by air and water in December.

Three-fourths of the farmers visited in the earlier study reported chickens, but only half of those in 1949 kept them. Most of the operators that kept chickens sold some eggs during the year. One-third of the dairy farmers, over one-half of the potato farmers, two-fifths of the potato-vegetable farmers, and three-fifths of the miscellaneous farmers had poultry on hand December 31. Only 8 respondents were classed as poultry farmers.

Numbers of chickens on farms increased about one-fourth during the year, although the number of farms with chickens decreased by one. The average per farm for all farms was 55 in January and 74 in December. The increase occurred on all types except potato farms. Poultry farms had an increase from 291 head to 376 head per farm and accounted for about half the total increase. The number of chickens on dairy farms more than doubled, with an increase from 23 to 49 per farm. Potato-vegtable farms reported an increase from an average of 18 to 25 head, and

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12/ One operator, not covered in the survey, was producing beef for market by feeding native hays and pasturing on tide flats.

13/ Anticipating upbreeding of quality in dairy stock resulting from the artificial insemination program.

Table 9. Livestock: Average number on farms, by type of farm
Matanuska Valley, December 31, 1949

Kind of livestock	27 Dairy farms	20 Potato farms	12 Potato-vege-table farms	8 Poultry farms	10 Miscellan-eous farms	77 All farms
			Average number per farm--all farms			
Dairy animals:						
Milk cows	13	1	1	1	2	5
Heifers	4	1	1	1	1	2
Calves	3	1	a/	1	1	2
Bulls	a/	a/	-	a/	a/	a/
Beef animals	a/	a/	1	-	-	a/
Sheep	--	1	-	-	a/	a/
Hogs	a/	a/	a/	a/	-	a/
Chickens	49	24	25	376	77	74
Other poultry	--	a/	-	-	1	a/
Horses	a/	a/	a/	a/	a/	a/
			Number of farms reporting			
Dairy animals:						
Milk cows	27	11	6	6	7	57
Heifers	26	8	5	4	3	46
Calves	24	6	4	3	4	41
Bulls	5	1	-	1	2	9
Beef animals	3	3	3	-	-	9
Sheep	--	2	-	-	1	3
Hogs	4	3	1	3	-	11
Chickens	9	11	5	8	6	38
Other poultry	--	1	-	-	1	2
Horses	6	3	1	1	1	12
			Average number for farms reporting			
Dairy animals:						
Milk cows	13	3	2	1	2	7
Heifers	4	3	2	2	3	3
Calves	4	2	1	3	3	3
Bulls	1	1	-	1	1	1
Beef animals	2	2	2	-	-	2
Sheep	--	6	-	-	2	5
Hogs	2	2	1	1	-	2
Chickens	146	44	68	376	108	150
Other poultry	--	3	-	-	5	4
Horses	1	1	1	1	2	1

a/ Although some were reported the average was less than half per farm.

miscellaneous farms increased chickens from 61 to 77 head per farm. The potato farms decreased from an average of 38 head in January to 24 in December.

Three of the farms had a total of 14 sheep, 11 had 17 hogs, and 12 reported 14 head of horses on hand in December.

Power and Equipment

Seventy-three operators, or 95 percent of all cooperating farmers, had tractors (table 10). Only one potato grower, one potato-vegetable farmer, one poultry producer and 2 others with miscellaneous types of farms did not have tractors. One of the 2 miscellaneous farmers had a horse, and the potato farmer had a team of horses. Three of the farms had no power of any kind and hired their heavy field work done.

Tractor plows were reported on 82 percent of the farms. The same proportion of farmers reported spring-tooth and spike-tooth harrows, and 61 percent had disk harrows. Fifty-three percent had cultivators; 49 percent, wheel hoes; 44 percent, potato diggers; 43 percent, grain binders, and 40 percent, grain drills. From 25 to 40 percent had potato planters, packers, mowers, dump rakes, electric motors, manure spreaders, fertilizer spreaders, and milking machine units. From 10 to 25 percent reported breaking plows, silo fillers, potato harvester attachment, and buzz saws.

Only 34 percent of the farmers had automobiles, but 82 percent had trucks. Of a total of 73 trucks, 44 percent were 1½ ton copacity; 29 percent, 1/2 ton or 3/4 ton; 8 percent, 1 ton; one percent, 2 ton; and the capacity was not reported on 18 percent. Four dairy men, 4 potato men, one potato-vegetable man, 2 poultry men and one miscellaneous farmer did not have trucks. Most of those without trucks had automobiles; only 5 had neither.

Farmers were asked to estimate the replacement value of their equipment and buildings (table 11). Farm power and equipment had an average valuation of $3,054 per farm and ranged from $391 to $7,797. Dairy farms had the highest valuation per farm, an average of $3,804, and the miscellaneous farm group had the lowest, an average of $2,024.

Farm Buildings

All of the farms had dwellings (table 12). Eighty-seven percent had barns, 74 percent had henhouses, and 75 percent had wells. About 4 of every 10 farms had upright silos, and 1 in 10 had trench silos. Forty-two percent had root cellars, but half of them were in basements

Table 10. Power and equipment: Number of farmers reporting specified kinds and total number reported by type of farms, Matanuska Valley, 1949

Kind	27 dairy farms		20 potato farms		12 pot.-veg. farms		8 poultry farms		10 Misc. farms		77 All farms	
	Farmers reporting	Total reported	Farmers reporting	Total reported	Farmers reporting	Total reported	Farmers reporting	Total reported	Farmers reporting	Total reported	Farmers reporting	Total reported
	number	number	number	number	number	number	number	number	number	number	number	number
Automobile	9	9	4	4	5	5	4	4	4	4	26	26
Truck	23	27	16	19	11	12	6	8	7	7	63	73
Tractor: wheel	27	33	19	20	11	11	7	8	8	8	72	80
tract	--	--	1	1	--	--	2	2	--	-	3	3
Tractor plow	26	27	16	17	9	9	6	6	6	6	63	65
Grain drill	15	15	7	7	3	3	3	3	3	3	31	31
Potato planters	4	4	9	8	5	4	3	3	2	2	23	21
Harrows: Disk	19	19	12	12	7	7	4	5	5	5	47	48
Spike & spring tooth	24	33	15	22	10	15	7	9	7	9	63	88
Packer	15	15	7	6	3	3	1	1	4	4	30	29
Breaking plow	4	4	3	3	4	5	2	2	3	3	16	17
Wheel hoe	11	17	12	17	10	23	3	4	2	4	38	65
Cultivators: Tractor a/	10	10	13	15	8	8	6	6	4	5	41	44
Mower	9	9	4	4	3	3	3	3	3	3	22	22
Rakes: Dump or side del.	13	13	5	6	3	3	2	2	5	5	28	29
Silo filler	12	9	3	3	1	--	1	-	-	-	17	13
Grain binder	17	16	7	7	3	3	4	3	2	2	33	32
Thresher	3	2	--	--	1	--	-	-	-	-	4	2
Potato digger	6	5	15	15	7	7	3	3	3	3	34	33
Potato picker upper	3	2	5	5	--	--	2	2	-	-	10	9
Electric motors	9	21	10	23	5	7	1	1	5	9	30	61
Manure spreader	17	17	3	3	--	--	-	-	2	2	22	22
Fertilizer spreader	9	9	4	4	5	6	2	2	-	-	20	21
Buzz saws	6	6	7	8	2	2	3	3	1	1	19	20
Wagons or trailers	4	6	1	2	--	--	1	1	1	1	7	10
Milking machine units	23	49	1	2	1	2	-	-	1	2	26	55
Garden planters	--	--	4	4	1	1	-	-	2	2	7	7
Other b/												

a/ Includes horse drawn cultivators converted to tractor use.

b/ Three farmers reported sawmills, 4 had hydraulic scoops, and 3 had potato graders. Two feed mills, one garden tractor, and one hay dryer (owned by 5 operators in partnership) were also reported.

of houses. Thirty-two percent had greenhouses; 33 percent, wellhouses; 17 percent, garages; and 40 percent had other types of buildings such as granaries, sheds and shops of various kinds.

Table 11. Replacement value of power, equipment and service buildings on farms by type of farm, Matanuska Valley, 1949 a/

Type of farm	Number of farms	Power b/ and equipment		Service buildings c/	
		Range	Average	Range	Average
	number	dollars	dollars	dollars	dollars
Dairy	27	1,592 - 7,797	3,804	3,100 - 19,300	9,090
Potato	20	650 - 5,860	2,757	500 - 13,864	4,389
Potato-vegetable	12	391 - 4,251	2,513	0 - 18,224	5,169
Poultry	8	1,080 - 5,627	3,234	4,100 - 7,200	5,373
Miscellaneous	9	750 - 2,990	2,024	620 - 9,370	5,064
All farms	76	391 - 7,797	3,054	0 - 19,300	6,383

a/ Based on farmer's estimation of current replacement values in like condition of machinery and buildings.

b/ Includes the farm part of automobiles and trucks.

c/ Does not include the farm dwelling.

Thirty-five of the 42 upright and 6 of the 8 trench silos were on dairy farms. The 27 dairy farms reproted a total of 39 barns. There were barns also on 14 of the potato farms, 10 potato-vegetable farms, 7 poultry farms and 8 miscellaneous farms. These barns generally are remnants of the Matanuska Colony plan and have limited utilization on the present types of farms. The 8 poultry farms had 15 poultry houses.

Estimated replacement value of service buildings averaged $6,383 per farm and ranged from nothing to $19,300. Highest average valuation per farm by types was $9,090 for dairy farms, and the lowest was $4,389 for potato farms.

Crop Yields

Average crop yields in 1949 together with comparisons for 1947 and usual yields as recorded in the 1947 report are given in table 13. Average yields of carrots, celery and greens probably are unreliable in view of the small acreage on which yield data was reported. Those farmers who grew small grains produced an average of 25 bushels of wheat, 37 bushels of oats and 21 bushels of barley per acre. Average yields for hay and silage were about 1½ and 4½ tons per acre, respectively. Potatoes averaged

Table 12. Farm buildings: Farmers reporting and number reported by type of farms, 76 farms, Matanuska Valley, 1949 a/

Kind	27 Dairy farms		20 Potato farms		12 Potato-vegetable farms		8 Poultry farms		9 Miscellaneous farms		76 All farms	
	Farms	Buildings	Farms	Buildings	Farms	Buildings	Farms	Buildings	Farms	Buildings	Farms	Buildings
	number	number	number	number	number	number	number	number	number	number	number	number
House	27	29	20	22	12	13	8	8	9	10	76	82
Barn	27	39	14	17	10	10	7	8	8	12	66	87
Upright silo	24	35	2	3	3	3	-	-	1	1	30	42
Trench silo	6	6	1	1	--	--	-	-	1	1	8	8
Poultry house	19	24	13	20	9	10	8	15	7	8	56	72
Greenhouse	6	6	6	7	7	9	1	1	4	4	24	27
Root cellar	11	11	9	9	6	6	4	4	2	2	32	32 b/
Garage	4	5	3	3	1	1	2	2	3	4	13	15
Well house	12	13	5	5	3	3	3	3	2	2	25	26
Wells	22	24	13	13	8	9	8	8	6	8	57	62
Others	13	20	9	11	5	7	3	3	-	-	30	41

a/ One of the 10 farms in the miscellaneous type was a children's home and this farm was not included when building inventories were tabulated.

b/ Sixteen, or one-half, of the root cellars were in basements of houses.

over 7 tons per acre of which three-fourths were number 1's. The carrot yield was 6½ tons, head lettuce 5 tons, and cabbage over 7 tons per acre.

Both wheat and oat yields were above 1947 averages, wheat by 10 bushels and oats by 5 bushels. Barley yields for the 2 years were about the same. Whereas, 1949 wheat yields were about the same as the usual yields reported in the 1947 study, oat yields were lower by 6 bushels. Barley yields per acre in 1949 were 14 bushels below the usual yield, possibly because of a cold wet harvest season.

Table 13. Crop yields: Average, 1949, 1947, and usual yields, Matanuska Valley

Crop	Units	1949 yields			1947 Average yield c/	Usual yield c/
		Farmers reporting	Total acres	Average		
Wheat	Bushel	11	74	25	15	24
Oats	do	24	226	37	32	43
Barley	do	4	26	21	21	35
Hay	cwt.	45	916	30	22	34
Silage	do	14	306	92	104	116
Potatoes	Bushel	51	320	243 a/	173	207
Carrots	cwt.	6	4	130	90	102
Head lettuce	do	17	24	100 b/	64	120
Cabbage	do	11	11	146	63	204
Celery	do	4	1	320	177	200
Greens	do	6	2	225 b/	---	---

a/ Saleable, or number 1 potatoes, averaged 182 bushels per acre

b/ The median

c/ "Some Economic Aspects of Farming in Alaska," Bureau of Agricultural Economics, Table Number 9, p. 36. Data are rounded to the nearest whole number.

The 1949 silage yield was slightly lower than both the 1947 and the usual yield indications. Vegetable yields were higher than in 1947. Crop yields, generally, were low in 1947 due to a dry spring. 14/

14/ "Some Economic Aspects of Farming in Alaska," p. 33

Income and Expenses

An itemized list of expenses, receipts and other income was secured from cooperating farmers. They were also asked to estimate the value of home used produce, game and fish. Income data on most of the miscellaneous farms were not comparable to other farm records, i. e. some were subsistence rather than commercial in their operations, some derived most of their income from other than farm sources, and one was a children's home.

It should be emphasized that income and expense data presented in this and other sections of the report are for only one season, are of a limited number of cases (especially of poultry and potato-vegetable farms) and represent only rough estimates on some items. For determining cash values where only quantities were secured, the following prices were used: eggs 90 cents per dozen; milk, $3 per hundredweight when used in the home and $4.50 when used for other farm purposes; and meat, including fish and game 30 cents per pound. Depreciation on buildings was counted at 6.67 percent of valuation and farm power and equipment at 10 percent. Milk cows were valued at $400 each, heifers at $200, calves at $50 and chickens at $2 when computing inventory changes.

Gross income is receipts from all sources (including non-farm work) plus increased inventories and the value of farm products, wild berries, game and fish used on the farm. It does not include the rental value of the farm dwellings.

Average gross income was $10,347 for the 67 farms (table 14). The average was lowest on potato-vegetable farms ($ 7,805) and highest on dairy farms ($12,631). Potato farms included both the highest and lowest gross income units of all farms, ranging from $1,725 to $31,404.

Cash income was 84 percent of gross income on the 67 farms, varying from 81 to 90 percent for the different types of farms. Milk sales accounted for 38 percent and potato sales for 30 percent of all cash income.

Total expenses averaged $5,175 per farm (table 15). Ninety-one percent, or $4,704 per farm, was cash expenses. One-fourth of all cash expense was for livestock and poultry feed. Other large items of expense were livestock and poultry purchases, hired labor, seed, fuel and oil, and fertilizers. Average total farm expense per farm was highest for the dairy type ($8,032) and lowest for the potato-vegetable type of farms ($2,709)

The difficulty of measuring economic returns to the Alaska farmer which are comparable with returns to the stateside farmer was pointed out in the 1947 study. The Alaska farmer not only has greater investment

and higher current expenses per operating unit than stateside farmers, but a higher cost of living due to the higher price level.

Table 14. Gross income by type of farm, 67 farms, Matanuska Valley, 1949 a/

Type of farm	Number of farms	Gross income	
		Range	Average
		dollars	dollars
Dairy	27	5,421 - 24,699	12,631
Potato	20	1,725 - 31,404	8,822
Vegetable-potato	12	3,585 - 10,020	7,805
Poultry	8	6,097 - 17,230	10,741
All farms	67	1,725 - 31,404	10,347

a/ Income data for miscellaneous farms are not included.

Net income on the 67 farms averaged $5,172 per farm. Sixty percent of the farmers had less than the average net incomes and 40 percent had incomes exceeding the average for all farms (table 16). The range was from a loss of $3,245 to a $24,170 profit. Sixteen percent of the 67 farmers made less than $2,000, and 9 percent made more than $10,000. In other words three-fourths of them had net incomes of more than $2,000 but less than $10,000.

TYPES OF FARMING

The 77 farms were classified by sources of cash farm receipts. Where over half of the receipts came from one source, the farm was so classed. There were 27 dairy, 20 potato, 12 potato-vegetable, 8 poultry and 10 miscellaneous farms. Separate analyses were made of each type to determine similar or dissimilar characteristics.

Dairy farming

Dairy farmers had more stable market outlets, more time devoted to farming by the farm family and a better year-round distribution of labor than other types of farmers. Their farms were generally larger, in terms of both cropland and total land, and had greater investments in buildings, machinery and livestock.

Table 15. Average financial summary of 67 farms, Matanuska Valley, 1949

Expenses	Amount (dollars)	Income	Amount (dollars)
Cash:		Cash:	
Feed	$1,175	Potatoes	$2,632
Livestock and poultry purchases	559	Vegetables and berries	679
Labor	565	Grain and hay	66
Seed	338	a/ Milk	3,306
Fuel and oil	301	Eggs	685
Custom work	235	Livestock and poultry	245
Fertilizer	298	Timber	16
Repairs: Equipment	196	A. C. P. payments	94
Buildings	42	Non-farm income	917
Hauling	107	Coop. overage and dividend	46
Interest	82	Machine hire and custom work	17
Taxes	120		
Veterinary and breeding	76	Total	$8,703
Rent	73		
Electricity	46	Non-cash:	
Insurance	54	Increase in equipment inventory	396
Auto and truck license (farm part)	9	Increase in livestock inventory	632
Miscellaneous	428	Farm produce, wild game and fish used on farm	616
Total	$4,704	Total	$1,644
Non-cash:			
Decrease in building inventory	471	Gross income	$10,347
		Less farm expense	5,175
Total farm expense	$5,175	Net income	$ 5,172

a/ Includes allowance for meals furnished hired laborers at $1.50 per meal.

Table 16. Type of farms in specified net income groups
Matanuska Valley, 1949

Net income	Type of farm									
	Dairy		Potato		Potato-Veg.		Poultry		All farms	
	number	percent	number	percent	number	percent	number	percent	number	percent
Under $2,000	6	22	3	15	2	17	0	0	11	16
$2,000 -- 3,999	6	22	6	30	1	8	3	38	16	24
4,000 -- 5,999	8	31	4	20	7	59	1	12	20	30
6,000 -- 7,999	3	11	4	20	1	8	3	38	11	16
8,000 -- 9,999	2	7	0	0	1	8	0	0	3	5
10,000 -- or more	2	7	3	15	0	0	1	12	6	9
	27	100	20	100	12	100	8	100	67	100

The belief that dairying is more profitable than other types of farming has caused an increase in the number of dairies in recent years. There were 35 grade A dairies in 1947. 15/ This had increased to 43 in the first part of 1950, with several other farmers planning to meet grade A specifications within another year.

Total grade A fluid milk sold in the Valley increased from about 2.5 million pounds in 1947 to over 3 million pounds in 1949. This increase was primarily due to an increase in the number of cows milked, but may partly be accounted for by a higher production per cow. Average annual production on 30 dairies covered in the 1947 survey was 7,200 pounds per cow; whereas, the average for the 27 cooperating dairies in 1949 was 7,900 pounds. An average of 7,030 pounds of milk per cow was sold. The remainder was used on the farm and in the home.

Most dairy farmers met their roughage needs with home grown hay and silage, and purchased the concentrates. An average of 2,486 pounds of concentrates, 4,960 pounds of hay and 9,490 pounds of silage per animal unit 16/ were used on the 27 dairies. When silage was converted to hay equivalent at 3 to 1, the average roughage available for consumption was about 4 tons per animal unit. Forage and concentrates available for the dairy provided an average of 7,300 pounds of total digestible nutrients per animal unit. Both roughage and concentrate averages include wastage.

Organization

Twenty-seven dairy farms were included in the survey. They averaged 229 acres per farm. Most of the farms were from 100 to 400 acres in size. One of the operators had 960 acres, which increased the average by 29 acres.

Acreages in cropland and seeded pasture better indicate size. Dairy farms had an average of 73 acres per farm or twice as much land in production as other types. Most of this was used for production of dairy feed, with forage and seeded pasture having priority and taking 81 percent of the total cropland. Another 14 percent was in grains, leaving less than 5 percent for potatoes, vegetables, green manure, fallow and idle land.

The 1949 records show an average of about 12 milk cows, 3 heifers, and less than 3 calves per dairy. There was an increase in the number of cows, heifers and calves per farm during the year. Numbers of milk

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15/ Some Economic Aspects of Farming in Alaska, p. 43

16/ Animal units were computed on a basis of the average number of cows in the beginning and ending inventories plus 1/2 the average heifer inventory.

cows per farm ranged from 1 17/ to 29 on December 31 with two-thirds of the operators having 10 or more per farm.

Nine dairy farms reported an average of 146 chickens per farm in December. This was almost twice the average reported by 8 dairies in the January inventories.

Estimated replacement values of service buildings 18/ were higher on dairy farms than other types, ranging from $3,100 to $19,300 and averaging $9,090 per farm. This was 40 percent higher than the average for poultry farms which had the next highest average service building inventory values. The necessity of buildings for feed storage, barns to house cattle and milk houses which meet health department requirements for grade A production explain the greater investment in buildings on dairy farms.

The December 31 estimated replacement value of power and equipment on dairy farms ranged from $1,590 to $7,800 per farm and averaged about $3,800. This was almost $600 greater per farm than the corresponding average of poultry farms, next highest by type. The use of costly specialized equipment for production of forage and grain crops and the greater crop acreages per farm necessitated higher equipment inventories on dairy farms.

Annual Labor Needs on Dairy Farms

Months when farm tasks are most likely to compete for a short labor supply are September, October and May (figure 1). Threshing and silo filling require crews made up of either hired or exchange labor. Binding grain and hay normally is custom hired with the farm operator or some member of his family making up one of the 2 men crew required to operate the tractor and binder. Since the harvest season is short and farmers must compete on a limited and expensive market for man power, the months of September and October are the most critical on dairy farms. Land preparation and seeding require the farmer's time in May. The short growing season pushes him to get his seed in the ground as soon as possible after the spring thaw.

Less labor is required for dairy operations (milking, cleaning, feeding, and caring for the dairy herd) during summer and early fall when cattle are on pasture. This allows some shifting of labor allocations during planting and harvesting seasons. Greater use of grass forage which can be harvested earlier than the common oat-pea mixture commonly used,

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17/ One operator had sold his herd and purchased 10 dairy heifers for new stock.

18/ The value of the homes was not included.

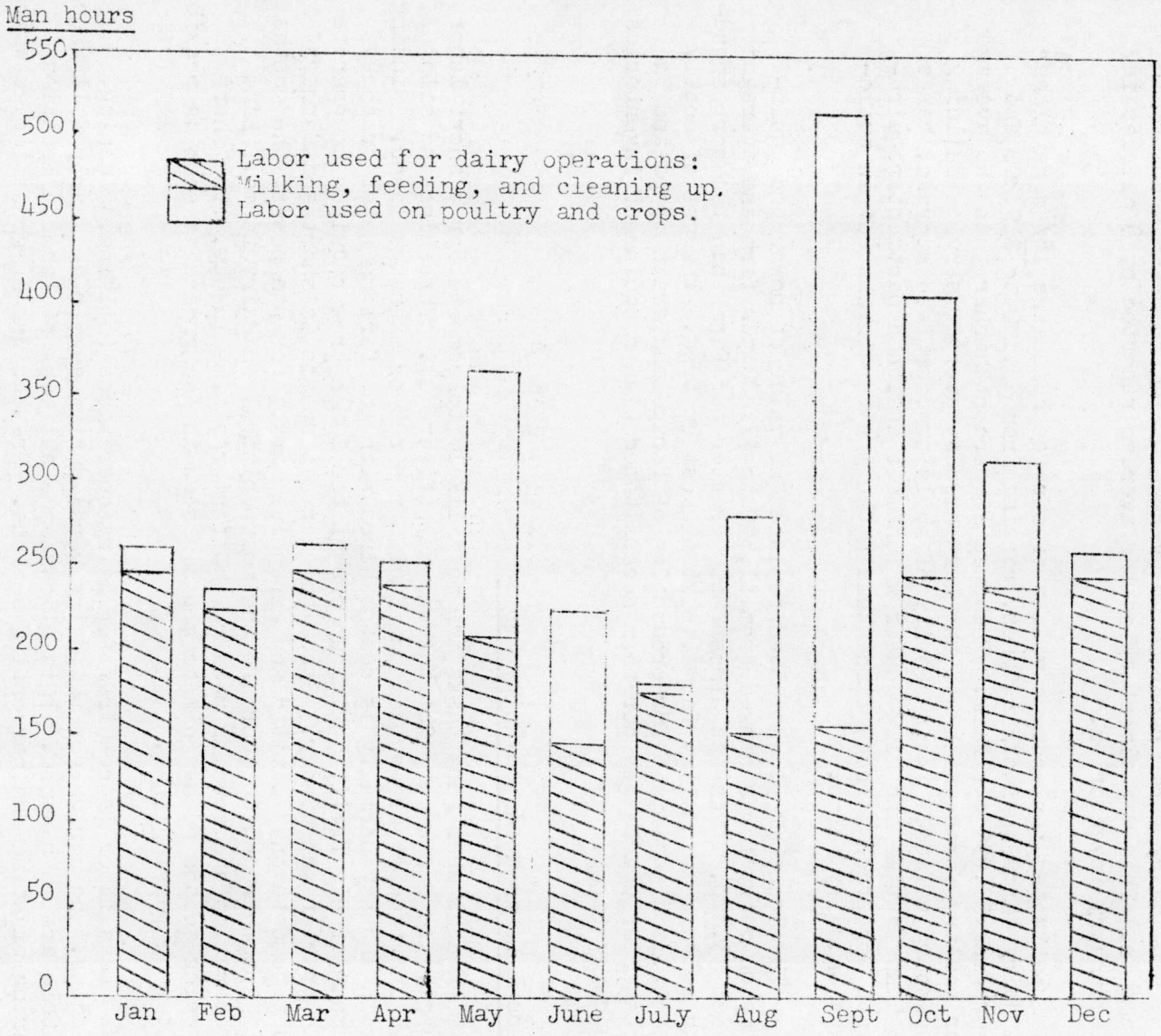

Figure 1. Annual distribution of labor needs for crops and livestock on 27 dairy farms, Matanuska Valley, 1949

would provide a more desirable annual distribution of labor needs on dairy farms.

Grain: Inputs and Practices

Enterprise data on inputs and practices were collected on 23 fields of grain ranging in size from 2 to 32 acres. Additional information on variety, acreage, fertilizer applications, yield and disposition was secured on all grain acreage reported. Since seed bed preparations are about the same for grain and hay the two crops were combined for purpose of analysis.

A total of 442 acres of grain were grown by the 77 operators. Sixty-five percent of the acreage was in oats, 19 percent in wheat, 9 percent in barley and 7 percent in mixed grain.

Fifty-three percent of the oat acreage was planted to Swedish Select and 47 percent to Victory. With the exception of one 6-acre field of Marquis, the wheat acreage was entirely Khogot. Trapmar Barley was the only variety planted. 19/

Growers seeded about 100 pounds of grain per acre. An average of 118 pounds per acre of commercial fertilizer was applied on one-third of the acreage.

They plowed or disked their land, or performed both these operations, in preparing the seed bed. About two-thirds also harrowed before seeding. Plowing required slightly over an hour per acre (table 17). Disking and harrowing took from one-half to one hour.

Of 23 grain fields, 13 were packed, fertilized and seeded in one operation; 9 were packed as a separate operation; and one was fertilized separately but seeded and packed in one operation. An average of slightly more than half an hour per acre was spent on these operations. Binding, shocking, and hauling and threshing required 1.7, 2.1 and 5.3 man hours per acre respectively. Slightly over 11 man hours were required to produce an acre of grain. Power required was about $3\frac{1}{2}$ tractor hours, $1\frac{1}{4}$ truck hours and one-half thresher hour (table 18).

The costs for seed, fertilizer, labor and power were computed on a basis of average price and wage rates prevailing in 1949 (table 19). Costs were separated into cash and non-cash according to the most common practice. Of the $42 total one-third was cash costs for fertilizer, seed and custom threshing. The other two-thirds were for labor and power furnished primarily by the operator and his family.

19/ See Alaska Experiment Station Circular 14 for recommended varieties of field crops.

Eighty-three acres produced 119,020 pounds of wheat, 286 acres produced 390,790 pounds of oats; and 42 acres produced 70,760 pounds of barley--a total 5,806 hundredweight of grain. At the calculated cost of $42 per acre, total production cost on the 411 acres would be $17,270 or an average of about $3.00 per 100 pounds of grain exclusive of storage and other overhead costs on farm machinery.

Table 17. Grain: Labor distribution per acre by operation, 23 fields, Matanuska Valley, 1949 a/

Operation	Fields on which practice was reported	Average time per acre: Fields on which practice was reported	Average time per acre: All fields
	number	hours	hours
Preharvest:			
Plowing	49 c/	1.1	.9
Disking	34 c/	.7	.3
Harrowing	38 c/	.6	.3
Seeding, packing and fertilizing b/	23	.6	.6
Total preharvest			2.1
Harvest:			
Binding	23	1.7	1.7
Shocking	23	2.1	2.1
Hauling and threshing	23	5.3	5.3
Total harvest			9.1
TOTAL			11.2

a/ Complete data of operations were taken on one or more fields of small grain from 17 growers covering 243 acres.

b/ Thirteen of the growers performed these tasks in one operation, 10 in 2 operations.

c/ From a total of 58 field schedules including the 23 grain and 35 hay and silage fields. There is, apparently, no difference in preparing the land for grain and hay.

Table 18. Grain: Labor distribution and tractor hours per acre by operation, Matanuska Valley, 1949

Operation	Date of performance	Times over	Size of crew	Labor and power used per acre	
				man	tractor
	date	number	number	hours	hours
Preharvest:					
Plowing	5/1 - 5/25	1	1	.9	.9
Disking	5/1 - 5/25	1	1	.3	.3
Harrowing	5/1 - 6/10	1 & 2	1	.3	.3
Seeding, packing and fertilizing a/	5/1 - 5/25	1	1	.6 a/	.6
Total preharvest				2.1	2.1
Harvest:					
Binding	9/10 - 10/20	1	1 & 2 c/	1.7	.9
Shocking	9/15 - 10/25	1	1	2.1	
Hauling and threshing b/	10/1 - --	1	3-8	5.3	.5 b/
Total harvest				9.1	1.4
TOTAL				11.2	3.5

a/ Of the 23 growers reporting, 13 packed, fertilized and seeded in one operation, 9 packed as a separate operation from seeding and fertilizing and 1 fertilized separately but seeded and packed as one operation.

b/ An average of 1.3 truck hours and .5 thresher hours were used per acre.

c/ Two men were used on most binder operations.

Table 19. Seed, fertilizer, labor and power costs of producing an acre of grain, Matanuska Valley, 1949

Item	Unit	Average quantity used per acre	Cost per unit	Total cost per acre
			dollars	dollars
Cash:				
Fertilizer	Cwt.	.4	6.00	2.40
Seed	Cwt.	1.0	7.35	7.35
Threshing - Custom	Hour	.5	b/	4.20
Total cash				13.95
Non-cash:				
Labor	Hours	10.7 a/	1.50	16.05
Power: Tractor	Hours	3.5	2.50	8.75
Truck	Hours	1.3	2.50	3.25
Total non-cash				28.05
Total				42.01

a/ Custom threshing cost includes the thresher operator's time of .5 hour per acre which is deducted from 11.2 hours of total labor used to secure 10.7 non-cash labor. Most threshing labor is listed as non-cash because considerable labor is exchanged during threshing.

b/ The most common custom rate was $6.00 per hour plus 5¢ a bushel.

Hay and Silage: Inputs and Practices

Detailed data on hay and silage production inputs and practices were secured on 35 fields. Of the total forage crop acreage reported harvested, about one-third was made into silage and two-thirds cured for hay. The most common forage was oat-pea or oat-pea-vetch mixtures. Some oats, wheat, and barley were used as hay in 1949 when it failed to mature, low grain yields were expected, or when the grower could not get it threshed.

Common seeding rates for an oat-pea mixture were 100 pounds of oats and 20 to 25 pounds of peas. For an oat-pea-vetch mixture the rates were 100 pounds of oats, 15 to 20 pounds of peas and 5 to 10 pounds of vetch.

An average of 53 pounds per acre of commercial fertilizer was applied on forage crop acreage. However, of the 65 farmers reporting on forage crop practices, only 21 used commercial fertilizers. Their rates were from 100 to 250 pounds per acre on the treated fields.

An average of about $10\frac{1}{4}$ man hours per acre was required to produce, harvest and store hay. Comparative time for silage was almost 11 hours (table 20). About four-fifths of total labor used in both cases were required for harvest and storage.

Tractor hours averaged about 3 hours per acre for hay and silage (table 21). Truck time was 2 hours for hay and $1\frac{1}{4}$ hours for silage. Some farmers leave their hay in shocks until needed, and the difficulty of breaking up the frozen shocks in winter adds considerably to hauling time.

Total cost for seed, fertilizer, labor and power to produce, harvest and store an acre of hay was $42.35--or an average cost of about $28.00 per ton (table 22). Thirty-four percent of the costs were cash items. To produce, harvest and store silage cost $41.90 per acre of which 35 percent was cash.

Economic Returns to Dairy Farmers

Gross income on dairy farms varied from $5,420 to $24,700, and averaged $12,631 (table 23). Nineteen percent of this was for non-cash income such as inventory increases and farm produce, wild game and fish used in the home. Seventy-eight percent of the cash income ($10,260 per farm) came from milk sales and 10 percent from crop sales.

Total cash expense per farm was $7,642, ranging from $2,320 to $17,560. Largest cash expense items were feed, livestock purchases and hired labor, which accounted for 26, 17 and 10 percent of all cash expenses respectively. Service buildings on dairy farms decreased in value $390 per farm, making the average total expense $8,032 per farm.

Table 20. Hay and silage: Labor distribution by operation on 35 fields, Matanuska Valley, 1949

Operation	Fields on which practice was reported	Average time per acre: Fields on which practice was reported	Average time per acre: All fields
	number	hours	hours
Preharvest:			
Plowing	49 a/	1.1	.9
Disking	34 a/	.7	.3
Harrowing	38 a/	.6	.3
Seeding, packing and fertilizing	35	.7	.7
Total preharvest			2.2
Harvest:			
Binding	35	1.7	1.7
Shocking (hay)	32 b/	2.5	2.5
Hauling and stacking (hay)	32 b/	3.8	3.8
Hauling and filling silo (silage)	12 c/	7.0	7.0
Total harvest (hay)			8.0
Total harvest (silage)			8.7
TOTAL: hay			10.2
silage			10.9

a/ From a total of 58 field schedules including the 23 grain and 35 hay and silage fields.

b/ Three of the 35 farmers put all their forage into silage.

c/ Complete data on ensilage harvest and storing was secured from only 12 operators.

Table 21. Hay and silage: Labor distribution and tractor hours per acre by operation, Matanuska Valley, 1949

Operation	Date of performance	Times over	Size of crew	Labor and power used per acre	
				Man e/	Tractor
	date	number	number	hours	hours
Preharvest:					
Plowing	5/1 - 6/10	1	1	.9	.9
Disking	5/1 - 6/10	1	1	.3	.3
Harrowing	5/1 - 6/30	1 & 2	1	.3	.3
Seeding, packing and fertilizing a/	5/10- 6/20	1	1	.7 a/	.7
Total preharvest				2.2	2.2
Harvest:					
Binding	8/15-10/15	1	1 & 2 d/	1.7	.9
Shocking (hay) b/	8/20-10/20	1	1 - 6	2.5 b/	-
Hauling and stacking (hay) c/	10/1- on	1	1 - 4	3.8	f/
Hauling and filling silo (silage)	8/15- 9/30	1	3 - 6	7.0	g/
Total harvest (hay)				8.0	.9
Total harvest (silage)				8.7	.9
TOTAL: hay				10.2	3.1
silage				10.9	3.1

a/ Thirty-one of 35 growers reported seeding, packing and fertilizing as one operation.

b/ Includes time spent reshocking by a few farmers.

c/ Some farmers haul their hay as needed through the winter and, if shocks are frozen to the ground, considerable time is spent breaking the bundles loose.

d/ Two men were used on most binding operations.

e/ A duplication of column 3 table 1.

f/ An average of 1.9 truck hours for hauling hay.

g/ An average of 1.3 truck hours for hauling silage.

Dairy farms had higher gross incomes than other types, but their net incomes were compartively low. Factors which may explain this are (1) dairying is expanding and newcomers have not yet reached full-scale production or gained experience in efficient and economic operation, and (2) dairy farmers are full-time operators and do not secure as much income from sources off the farm as do other types of farmers. Also one year is not sufficient indication of returns to the different types of farms that can be expected over the long-run period.

Table 22. Seed, fertilizer, power and labor costs of producing an acre of hay and silage, Matanuska Valley, 1949

Item	Unit	Average quantity used per acre	Cost per unit	Total cost per acre
			dollars	dollars
Cash:				
Seed a/	Cwt.	1.25 a/	9.67 a/	12.09
Fertilizer	Cwt.	.53	4.59	2.46
Total cash				14.55
Non-cash:				
Hay - labor	Hours	10.2	1.50	15.30
power: tractor	Hours	3.1	2.50	7.75
truck	Hours	1.9	2.50	4.75
Total non-cash				27.80
Silage - labor	Hours	10.9	1.50	16.35
power: tractor	Hours	3.1	2.50	7.75
truck	Hours	1.3	2.50	3.25
Total non-cash				27.35
Total hay				42.35
Total silage				41.90

a/ Various combinations of oat-pea, oat-pea-vetch and oat-vetch were grown for hay and silage. The average quantity used per acre and cost per hundredweight is for the combined seedings per acre.

The average net income was $4,609 per farm, ranging from a loss of $2,070 to a $12,800 profit. Of the 27 farmer's net incomes 13 were less than and 14 were greater than the average for the group.

Table 23. Average financial summary of 27 dairy farms, Matanuska Valley, 1949

Expenses	Amount (dollars)	Income	Amount (dollars)
Cash expenses:		Cash income:	
Feed	$1,969	Milk	$7,912
Livestock and poultry purchases	1,326	Crops	1,046
Labor-hired	744 b/	Livestock	397
Seed	559	Eggs	287
Fuel and oil	391	A. C. P. payments	148
Custom work	363	Coop overage and dividend	75
Fertilizer	263	Machine hire and custom work	36
Repairs: Equipment	249	Timber	3
Buildings	11	Non-farm work	346
Hauling	222		
Interest	185	Total	$10,260
Taxes	181		
Veterinary and breeding	165	Non-cash:	
Rent	151	Increase in power and machinery inventory	395
Electricity	82	Increase in livestock and poultry inventory	1,431
Insurance	75	Farm produce, wild game and fish	565
Auto and truck license (farm part)	11		
Miscellaneous	695 c/	Total	$2,391
Total	$7,642		
Non-cash:		Gross income	$12,631
Decrease in building inventory a/	390	Less farm expenses	8,032
Total	$ 390	Net income	$ 4,609
Total farm expense	$8,032		

a/ Does not include dwelling place.

b/ Includes allowance for 1 meal a day at $1.50 each--or a total of $47 for meals furnished hired labor.

c/ Instead of endeavoring to secure expense data on the numerous small items used on the dairy an allowance of 10 percent was made of all other cash items.

Potato Farming

Potato farming is second only to dairying in the Matanuska Valley. Three-fourths of all cooperators grew potatoes for sale. They averaged 6 acres, which on most farms provided a sizable source of income. One-fourth of the units included in the study were typed as potato farms, i. e. over half of their total cash farm receipts came from potato sales. Also, potato sales provided 30 percent of the total cash income on all 67 farms for which financial summaries were computed.

As compared to dairy farming, potato production requires less investment in machinery and buildings, provides more time for leisure or off-the-farm employment during the long winters (40 percent of the potato farms were part-time units) and can better utilize the labor of women and teen-age children during the peak season.

Organization

Potato farms averaged 185 acres in size, but only one-fifth (35 acres) of this was cropland. Fourteen of the 20 potato farms had less than 40 acres of cropland and 7 of these had less than 20 acres. However, operators were not using the cropland which they had available. Over 4 acres was idle or fallowed leaving less than 31 acres actually farmed. Potato acreage averaged 10 per farm, ranging from 2 to 50 acres. Seventy percent of the farms had less than the average. Eight was the most often reported acreage.

Potato farms also had an average of 10 acres of hay and silage, 7 acres of small grains, 3 acres of seeded pasture, and an acre of vegetables.

Eleven of the 20 potato farms reported a total of 29 milk cows, 8 had 23 heifers and 6 had 10 calves on December 31. The January 1 inventory was about the same for milk cows and heifers, but 7 of the farms had 19 calves the first of the year--nearly twice the ending inventory. Eleven respondents had an average of 44 chickens at the end of the year, a third less than at the beginning.

Inventories of power and equipment were valued from $650 to $5,860, averaging nearly $2,760 per farm. This was lower than the average for dairy and poultry farms, but higher than potato-vegetable and miscellaneous farms. The replacement value of service buildings ranged from $500 to $13,864 and averaged about $4,390 per farm. The average valuation for service buildings on potato farms was lower than the average for other types of farms.

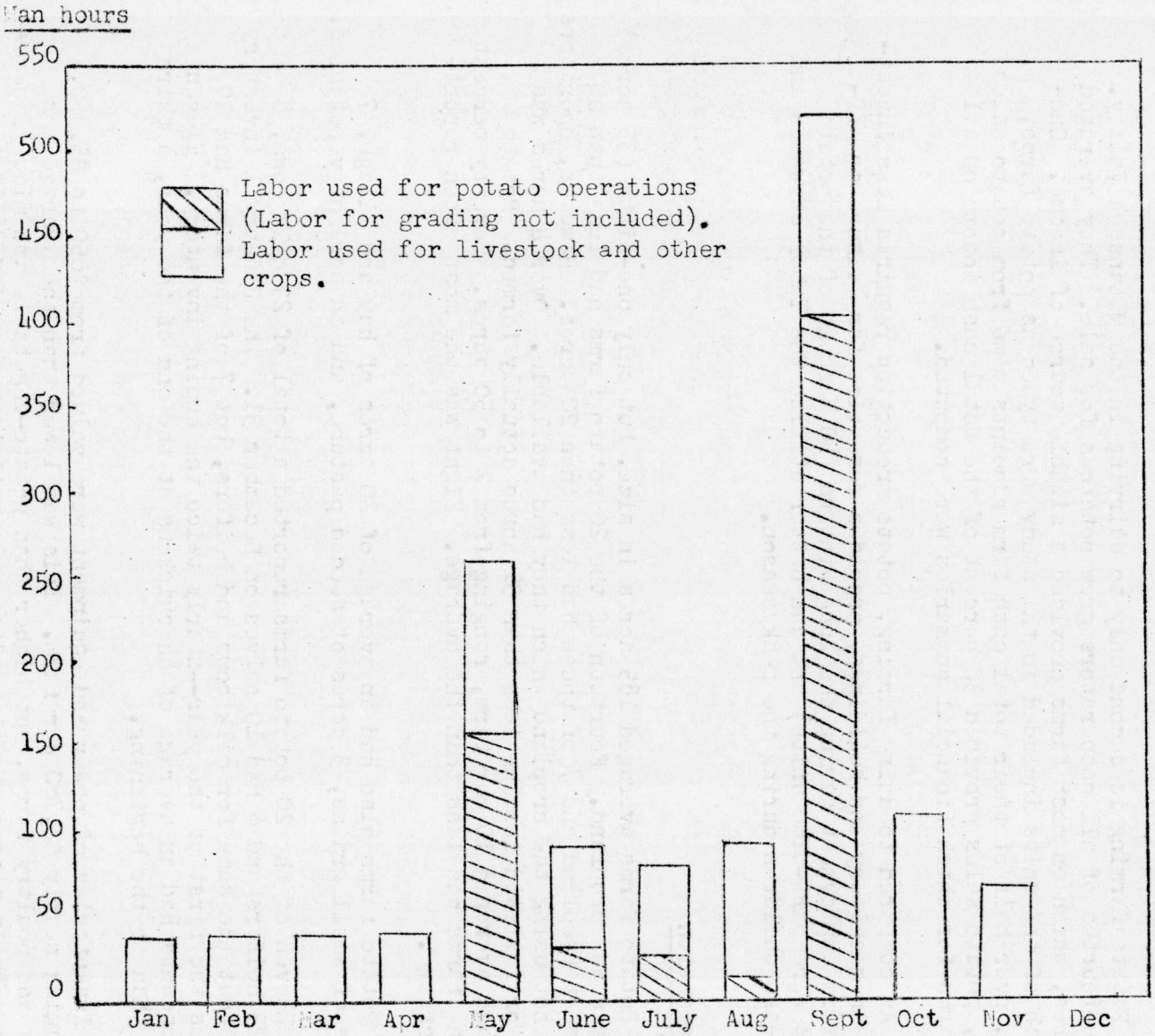

Figure 2. Annual distribution of labor needs for crops and livestock on 20 potato farms, Matanuska Valley, 1949.

Annual Labor Needs on Potato Farms

The present annual distribution of labor needs (figure 2) on potato farms is undesirable. The farm family is fully occupied with productive farm tasks during only 2 months--May and September. An average family of 3 persons over 10 years old can adequately meet the labor needs for land preparation and planting in May. September, the harvest month, is the period of greatest labor needs and competition from other industries and other farm enterprises during this month often presents an acute labor problem. A crew of 4 to 10 able bodied workers is needed for harvest, and potato farmers often must hire women and children for this work.

The Potatoe Enterprise: Inputs and Practices

Enterprise schedules covering details of potato production were taken on 23 plots of from 2 to 50 acres in size, a total of 192 acres. Additional information on varieties, fertilizer applications, acreage planted, production and disposition were secured from all potato growers.

Labor and power. Twenty-three growers used about 80 man hours per acre for potato production (table 24). This includes seed bed preparation, culture, harvest, hauling to the warehouse and grading. It does not include marketing which is performed by the Cooperative.

One-half of the total labor was used for harvest and transportation and one-fifth for grading. One fourth of the time, or about 20 hours, was used for culture and only $3\frac{1}{4}$ hours for seed bed preparation.

Most of the mechanized operations occur during the preharvest period. Whereas harvest time required 51 percent of total labor, tractor power used during harvest was only 18 percent of the total tractor power used (table 25). Trucks were used an average of 2 hours per acre for hauling.

Seed and fertilizer. Arctic Seedling was the main variety of potatoes grown in 1949. A few farmers grew White Bliss. Of 46 growers reporting, 38 grew only Arctic Seedling and 3 grew Arctic Seedling and White Bliss or Minnesota 47 in combination.

Planting rates varied from 500 to 1,000 pounds and averaged 765 pounds per acre. Almost two-thirds of the growers used only "home-grown" seed. A few others used both home-grown and purchased seed. One-fourth of the growers purchased their entire supply.

Farmers applied from 300 to 800 pounds of commercial fertilizer on potatoes, averaging 520 pounds per acre. In terms of available plant nutrients, applications were: total nitrogen (N) 38 pounds, available phosphoric acid (P_2O_5) 98 pounds and water soluble potash (K_2O) 71 pounds. 19

19/ See Alaska Experiment Station Circular 10 for general recommendations of fertilizers for Alaska mineral soils.

Table 24. Potatoes: Labor distribution per acre by operation 23 potato fields, Matanuska Valley, 1949

Operation	Number of fields on which practice was reported	Average man hours per acre for fields on which practice was reported	Average man hours per acre for all fields
Land preparation:			
Plowing	22	1.6	1.6
Disking	11	1.3	.8
Harrowing	19	.5 c/	.5 c/
Others a/	9	.5	.3
Total			3.2
Culture:			
Cutting and treating seed	23	7.7	7.7
Planting and fertilizing	23	4.0	4.0
Harrowing	15	.5	.4
Cultivating	23	3.1	3.1
Hilling	20	1.0	1.0
Weeding and hoeing	11	10.7	3.6
Other	2	.9	.1
Total			19.9
Total preharvest			23.1
Harvest:			
Beating down vines	8	1.2	.4
Digging	23	2.2	2.2
Picking up and sacking	23	34.1	34.1
Hauling	23	4.6	4.6
Total harvest			41.3
Grading	b/	b/	15.5
GRAND TOTAL			79.9

a/ Mostly cultipacking.
b/ Based on estimates of two growers who spent some time helping grade at the cooperative sheds.
c/ Some harrowed twice.

Table 25. Potatoes: Labor distribution and tractor hours per acre by operation, Matanuska Valley, 1949

Operation	Date of performance	Times over	Size of crew	Requirements per acre	
				Man	Tractor
	date	number	number	hours	hours
Land preparation:					
Plowing	5/1 - 5/30	1	1	1.6	1.6
Disking	5/1 - 5/30	1	1	.8	.8
Harrowing	5/1 - 5/30	1 - 2	1	.5	.5
Others	5/1 - 5/30	1	1	.3	.3
Total				3.2	3.2
Culture:					
Cutting and treating seed	5/1 - 5/30	1	1-4	7.7	--
Planting and fertilizing	5/10- 5/30	1	2	4.0	4.0
Harrowing	5/20- 6/15	1-2	1	.4	.4
Cultivating	5/20- 7/20	1-6	1	3.1	3.1
Hilling	6/20- 7/20	1	1	1.0	1.0
Weeding and hoeing			1-4	3.6	--
Other			1-2	.1	--
Total				19.9	8.5
Harvest:					
Beating down vines a/	9/5 - 9/30	1	1	.4 a/	.4 a/
Digging	9/10- 9/30	1	1-2	2.2	2.2
Picking up and sacking	9/10- 9/30	1	2-12	34.1	--
Hauling b/	9/10- 9/30	1-2 b/	1-4	4.6	c/
Total				41.3	2.6
Grading	10/1- 5/1		3-7	15.5	--
GRAND TOTAL				79.9	14.5

a/ Operators of the rotobeater estimated 1½ hours per acre required for this operation, varying from 3/4 to 1 3/4 hours per acre. Slightly less than one-half reported having their vines beat with a rotobeater prior to digging.

b/ The potatoes are sometimes hauled direct from field to cooperative storage and sometimes from the field to farm storage bins and later to cooperative storage or selling point.

c/ Trucks were used an average of 2 hours per acre for hauling.

Over two-thirds of the growers bought the concentrated carriers and mixed their own fertilizer in preference to purchasing the ready mixed analysis.

Seed dip and containers. Not enough data were secured to supply reliable figures on cost of seed dip and sacks for harvest. Extension Service recommendations for seed dip indicate that one pound of Semesan Bel will treat from 60 to 70 bushels of potatoes, or enough seed to plant 5 acres. About 42 percent of the farmers had less than 5 acres in potatoes, and 89 percent had 10 acres or less. But most farmers purchase at least 2 or 3 pounds of dip ingredients, since 1 pound is mixed with only $7\frac{1}{2}$ gallons of water and would involve physical difficulties and loss of time while dipping.

The cooperative sold used feed sacks for field use at 15 cents each. Indications are that the sacks would last about 2 seasons. In 1949, 74 sacks per acre would be sufficient to cover harvest needs. An additional 109 new sacks (25 cents each) were used in which to market the 10,900 pounds of number 1 potatoes sold per acre.

Costs in 1949. A summary of expenses in 1949 indicates that the farmer paid cash for about two-thirds of the total costs to produce an acre of potatoes (table 26). Costs were figured only on material, labor and power expenses and the cash cost of those items in 1949. Tractor and truck power and hire of the rotobeater were charged at custom rates which should adequately cover both current and overhead costs on those items. But fixed or overhead costs on other machinery, land, and service buildings used for potato production were not included.

Those materials and operations for which the farmer normally pays cash are listed as such unless otherwise specified. Most farmers hire extra help during harvest, and those that had their vines beat down paid a custom rate. Although over two-thirds of the operators used home-grown potatoes for seed, the item is entered as a cash expense on the assumption that the farmers had a constant cash value involved--had the potatoes not been kept for seed they could have sold them and a cash purchase would have been necessary. This assumption is not true, however, if the farmer used potatoes of less than number 1 quality for seed.

Both farm family and hired labor was charged at the regular price of $1.50 per hour. Truck and tractor power, in most instances furnished by the operator, was charged at the custom rate of $2.50 per hour.

Costs for the items listed total $273 per acre, or an average of $2.40 per hundredweight of number 1 potatoes. Average returns per acre was $510 or $4.68 per 100 pounds of potatoes. This left an average of $237 per acre to pay for land, machinery and building costs plus returns to the operator for his managerial efforts.

Table 26. Seed, fertilizer, materials, labor and power costs of producing an acre of potatoes, Matanuska Valley, 1949

Item	Unit	Average quantity used per acre	Cost per acre	Total cost per acre
			dollars	dollars
Cash:				
Fertilizer	Cwt.	5.17	5.60	29.02
Seed dip a/	Pounds	1.00	1.95	1.95
Sacks: Harvest b/	Number	74.00	.15	11.10
Market	Number	109.00	.25	27.25
Seed c/	Cwt.	7.66	5.00	38.30
Labor: Picking up and sacking d/	Hour	34.10	1.50	51.15
Labor and power: Beat vines down	Acre	--	6.00	6.00
Labor: Grading	Hour	15.50	1.50	23.25
Total cash				188.02
Non-cash				
Labor	Hour	30.1	1.50	45.15
Power: Tractor	Hour	14.1	2.50	35.25
Truck	Hour	2.0	2.50	5.00
Total non-cash				85.40
TOTAL COST				273.42

a/ Too few farmers reported seed dip quantity for a reliable average. One pound of Semesan Bel will treat from 60 to 70 bushels of potatoes according to a mimeograph release by the Alaska Extension Service dated May, 1937.

b/ The 74 sacks used is based on 7.3 ton per acre and on the assumption sacks will last 2 years.

c/ Over two-thirds of the growers used home-grown potatoes for seed, but it is entered as a cash item of expense in lieu of cash value.

d/ Most labor for picking up and sacking is hired labor. It is considered that hauling and digging, counted as a non-cash item, adequately compensates for family labor used during harvest.

Economic Returns to Potato Farmers

As indicated in table 27 cash expense was 83 percent of total expense on potato farms. The 2 largest items of cash expense were hired labor and fertilizers, which accounted for 18 and 16 percent of all cash expense, respectively. Total farm expense averaged $3,153 per farm.

The gross income averaged $8,822 per farm in 1949. Eighty-seven percent was cash, and almost two-thirds of this came from potato sales. Twenty percent of all cash income, an average of $1,573 per farm, came from salaries and wages for non-farm work.

Net income on potato farms varied from $950 to $26,430 and averaged $5,669 per farm. One potato farmer was very successful in 1949 and his figures increased the average income of all potato farmers by about $1,000 per farm. Net income on potato farms also includes the $1,573 income from other than farm sources. This represents over one-fourth of total net income. In view of this, the average should serve to emphasize that data for one year do not indicate returns to family labor and investment that can be expected from the different types of farming over a long run period.

Potato-Vegetable Farming

Twelve of the 77 farmers in the current study received major portions of their farm income from potatoes and vegetables. Potato-vegetable farmers have a better distribution of farm labor needs in the summer and spend less time working off the farm than did potato farmers.

Organization

The farms averaged 147 acres in size. Total cropland was 34 acres on the average but 5 of this was idle or fallowed. Therefore, less than 30 acres actually were farmed. Potatoes were planted on 6 and vegetables on 5 acres, taking a total of 32 percent of cropland. The farms had an average of 2 acres in grain, 8 acres in hay and silage and 6 acres in seeded pasture.

Six of the 12 farmers reported a total of 9 milk cows, 5 had 8 heifers and 4 farms had a calf each on hand December 31. Only 5 of the farmers had December inventories of chickens as compared to 7 in January. However, the 5 farmers had a total of 340 birds at the end of the year, whereas, the 7 had only 224 at the beginning.

Operators' estimates of replacement value on farm equipment ranged from $391 to $4,251 and averaged $2,513 per farm. These values were less

Table 27. Average financial summary of 20 potato farms in the Matanuska Valley, 1949

Expenses	Amount (dollars)	Income	Amount (dollars)
Cash expenses:		Cash income:	
Feed	252	Potatoes	4,996
Livestock and poultry purchases	18	Non-farm income	1,573
Labor: hired	461 a/	Other crops	559
Seed	227	Livestock and livestock products	495
Fuel and oil	275	A. C. P. payments	69
Custom work	184	Coop overage and dividend	11
Fertilizer	407	Machine rent and custom work	1
Repairs: Equipment	180	Timber	6
Buildings	93		
Hauling	46	Total	7,710
Interest	75		
Taxes	74	Non-cash:	
Veterinary and breeding	20	Increase in pwer and machinery inventory	405
Rent	36	Farm produce, wild game and fish	707
Electricity	6		
Insurance	18	Total	1,112
Auto and truck license (farm part)	7		
Miscellaneous	238 b/	Gross income	8,822
Total	2,617	Less farm expenses	3,153
Non-cash:		Net income	5,669
Decrease in livestock inventory	55		
Decrease in building inventory	481 c/		
Total inventory decrease	536		
Total farm expense	3,153		

a/ Includes $51 allowance for meals furnished hired labor.

b/ Ten percent of other cash items.

c/ Does not include dwelling.

than the averages on dairy, potato and poultry farms. The replacement value of service buildings was slightly more than on potato farms, being $5,169 per farm, and ranging from nothing to $18,224.

Annual Labor Needs on Potato-Vegetable farms

Very few livestock are kept on potato-vegetable farms. Therefore, farm labor needs are negligible in the winter months (figure 3). As on other types of farms, September is the most critical month. However, during the months of June, July and August the farm labor force is more nearly utilized than on potato and poultry farms. Labor needs on potato-vegetable farms are comparable to the average dairy farm needs during these 3 months.

Economic Returns to Potato-Vegetable Farmers

Gross income averaged $7,805 per farm, of which 90 percent was cash (table 28). Forty-one percent of cash income was from potato sales and 42 percent was from vegetables and berries. The remaining 17 percent of cash income came from all other sources.

Expenses averaged $2,709. Almost 80 percent of this, or $2,153, was cash expense. Hired labor, fertilizer, fuel and oil, equipment repairs, seed, and feed were the largest cash expense items.

Net income was $5,096 per farm. Salaries and wages for off-the-farm employment accounted for 13 percent of this. Range in net income on individual farms was from $1,980 to $8,230.

Poultry Farming

Poultry farms were more limited in number than the other types of farms. With more stable grain production, better poultry production practices, and developed markets the poultry enterprise may have advantages that potato and vegetable farming lack.

Poultry farms were smaller than other farms. The average size was only 83 acres of which 25 were under cultivation. Of this, 4 acres were in potatoes, 5 acres in grain, 10 acres in hay and 2 acres were idle and fallowed.

Poultry farmers had an average of 376 hens per farm at the end of 1949. This was 29 percent more than the beginning inventory. Poultry farmers also had an average of one cow per farm and slightly more than one heifer and one calf per farm.

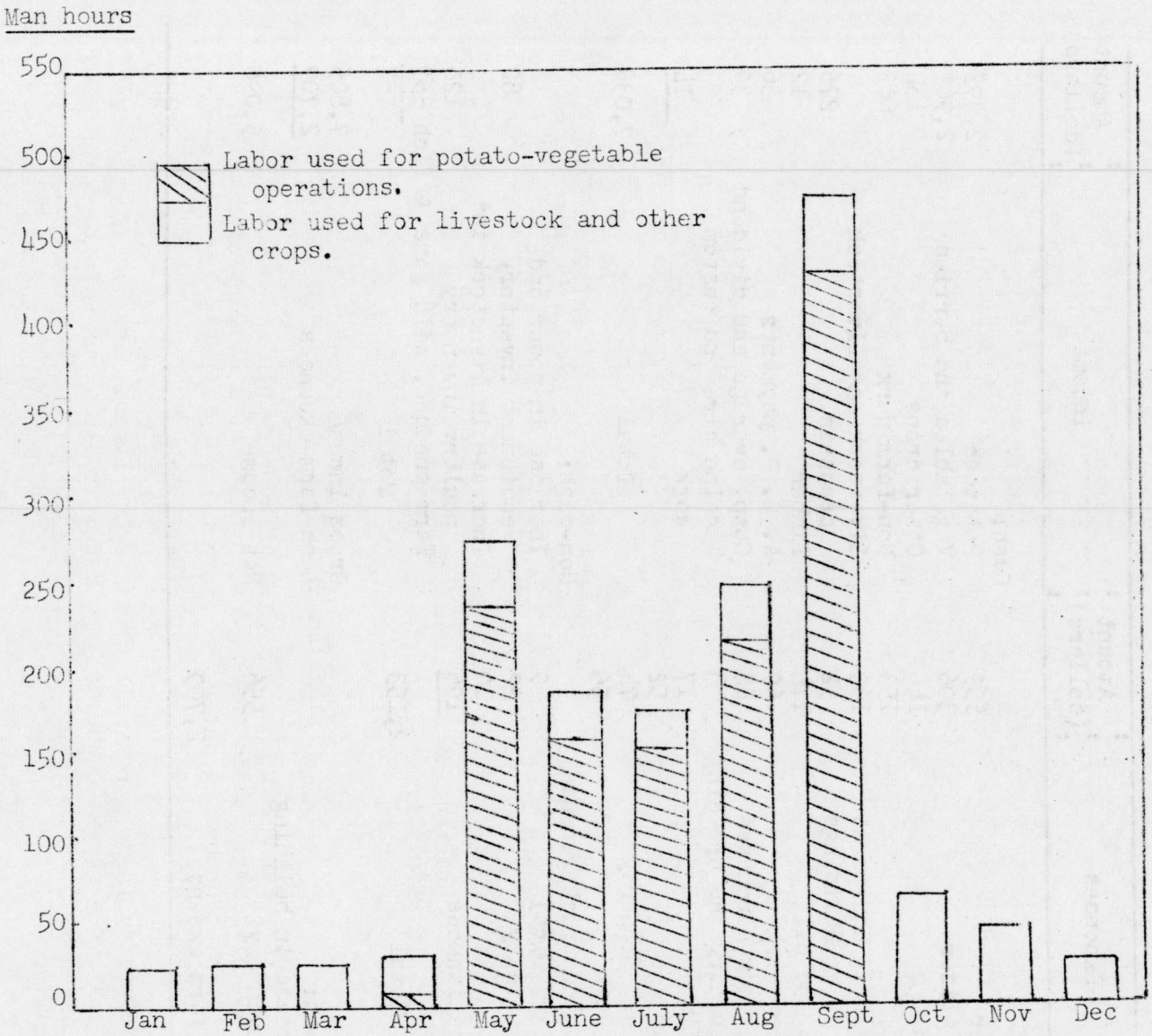

Figure 3. Annual distribution of labor needs for crops and livestock on 12 potato-vegetable farms, Matanuska Valley, 1949.

Table 28. Average financial summary of 12 potato-vegetable farms, Matanuska Valley, 1949

Expenses	Amount (dollars)	Income	Amount (dollars)
Cash:		Cash:	
Labor	559	Potatoes	2,895
Fertilizer	306	Vegetables and berries	2,969
Feed	148	Other crops	134
Seed	153	Non-farm work	663
Repairs: Equipment	160	Livestock and livestock products	276
Buildings	52	Timber	12
Fuel and oil	174	A. C. P. payments	36
Custom work	69	Coop. overage and dividend	39
Livestock purchases	88	Machine hire and custom work	14
Veterinary and breeding	8		
Hauling	17	Total	7,038
Insurance	52		
Taxes: property	74		
Interest	56		
Auto and truck license (farm part)	9	Non-cash:	
Electricity	22	Increase in power and equipment inventory	82
Rent	10	Increase in livestock and poultry inventory	126
Miscellaneous	196	Farm produce, wild game & fish	559
Total	2,153	Total	767
		Gross income	7,805
Non-cash:		Less farm expenses	2,709
Decrease in building inventory	556		
		Net income	5,096
Total farm expense	2,709		

The estimated replacement value of power and machinery was $3,234 and of service buildings $5,370 per farm. The investment in power, machinery and buildings was less than on dairy farms but slightly greater than on the potato and potato-vegetable farms.

Farm labor needs on poultry farms were greatest during harvest time in September (figure 4). No other month during the year would tax the farm's labor resources unless off-the-farm employment were competing for the family's time.

The 8 poultry farmers had an average gross income of $10,741 (table 29). Eighty-two percent was cash income, of which half came from egg sales. Twenty-three percent of cash income came from potatoes and 18 percent from non-farm work. The remainder came from several miscellaneous sources.

Total expense averaged $5,385 per farm. Eighty-nine percent of this was cash expense. The feed bill accounted for almost half of this, and hired labor accounted for a tenth.

Net income ranged from $3,590 to $8,230 on the 8 poultry farms, and averaged $5,356. The average was greater than for dairy and potato-vegetable farms but less than for potato farms. Non-farm work accounted for 30 percent of net income.

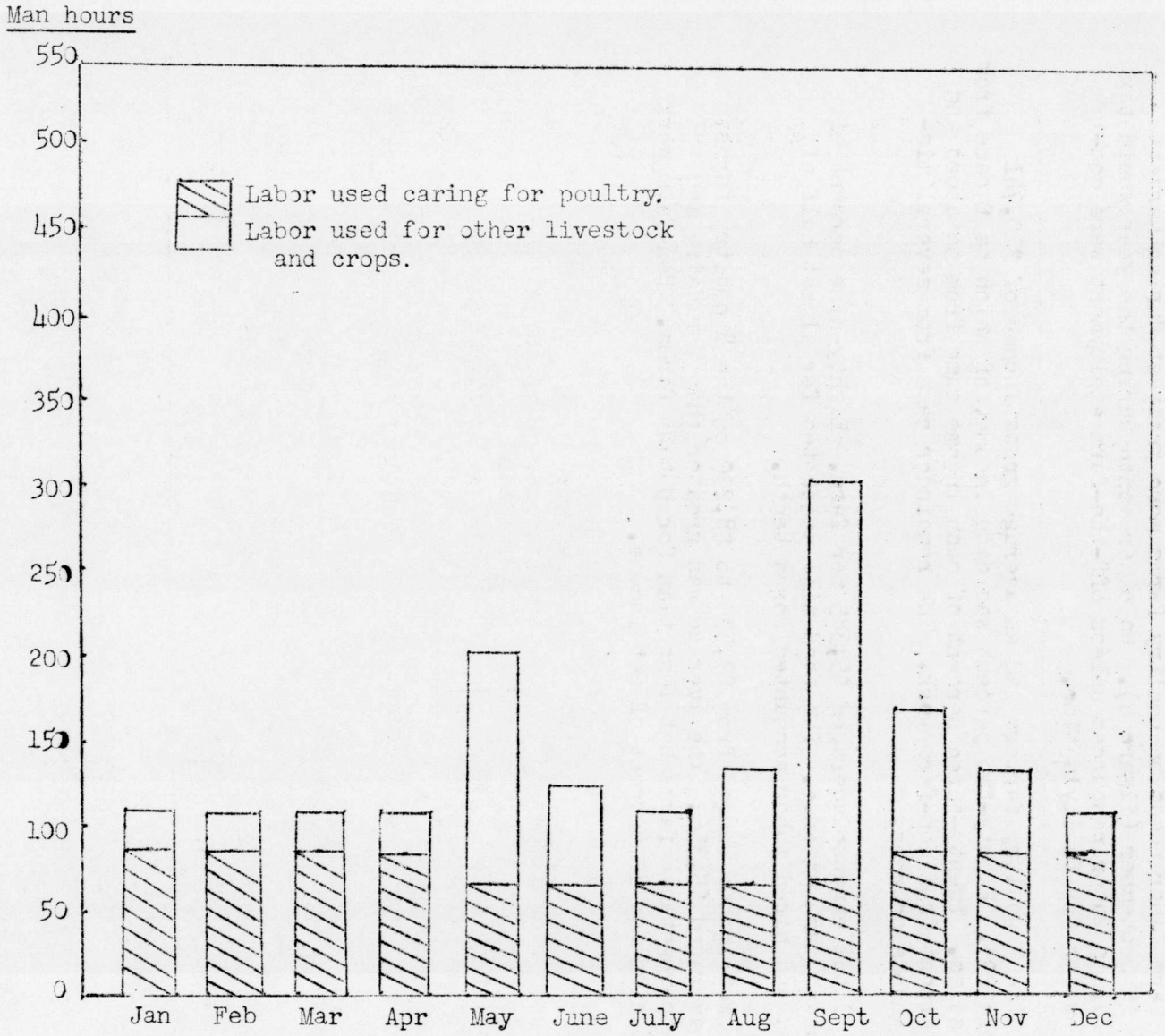

Figure 4. Annual distribution of labor needs for crops and livestock on 8 poultry farms, Matanuska Valley, 1949

Table 29. Average financial summary of 8 poultry farms, Matanuska Valley, 1949

Expenses	Amount (dollars)	Income	Amount (dollars)
Cash:		Cash:	
Feed	2,339	Eggs	4,360
Labor	505	Chickens sales	237
Livestock and poultry purchases	226	Potatoes	2,064
Fuel and oil	249	Other crops	122
Custom work	181	Other livestock and livestock products	239
Fertilizer	132	Timber	88
Seed	145	Non-farm work	1,614
Repairs: Equipment	109	A. C. P. payments	60
Buildings	30	Coop. overage and dividend	45
Veterinary and breeding	19	Machine hire and custom work	1
Hauling	11		
Insurance	74	Total	8,830
Taxes: Property	102		
Interest	164	Non-cash:	
Auto and truck license (farm part)	9	Increase in equipment inventory	850
Electricity	58	Increase in livestock inventory	412
Miscellaneous	435	Farm produce, wild game and fish used on the farm	649
Total	4,788	Total	1,911
Non-cash:			
Decrease in building inventory	597	Gross income	10,741
		Less farm expenses	5,385
Total farm expense	5,385	Net income	5,356